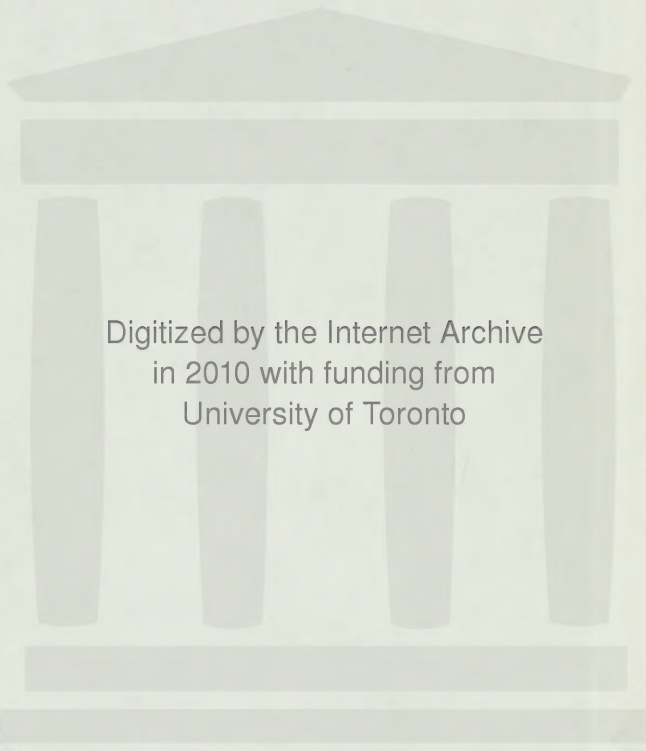


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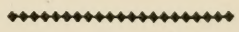


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THE  
HISTORY OF WAGES  
IN THE  
COTTON TRADE  
DURING THE PAST  
HUNDRED YEARS.

BY  
GEORGE HENRY WOOD,  
FELLOW AND GUY SILVER MEDALLIST OF THE ROYAL STATISTICAL SOCIETY.



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LONDON:  
SHERRATT AND HUGHES.  
MANCHESTER: 34, CROSS STREET.

1910.



## PREFATORY NOTE.

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THE Cotton Industry has been so frequently and thoroughly investigated and described from one point of view or another that it appears, at first sight, superfluous to add yet another book to the number already published. Closer intimacy with the literature of the Industry, however, reveals the fact that while various writers have incidentally considered the question of wages, their history and methods of arrangement, no writer has yet traced with fulness of detail the history of wages since the in-coming of the Factory System. In this way the Cotton Industry is only just as neglected as all the other great industries, with the single exception of Agriculture, and this neglect I have endeavoured to remedy.

An investigation extending more or less actively over a period exceeding ten years cannot be carried on without involving the investigator in personal obligations to many people. That of which the results are now presented forms no exception, and my thanks are gratefully tendered to those many friends in Lancashire and elsewhere who have helped me with information, oftentimes extracted from old records after great trouble and inconvenience, and with advice. Further, my thanks are also tendered to the Council of the Royal Statistical Society for their kind and ready permission to reprint these chapters from the pages of the Journal of that Society, where they originally appeared, forming Parts XV to XIX of "The Statistics of Wages in the United Kingdom "during the Nineteenth Century."

G.H.W.

HUDBERSFIELD,

*July 1st, 1910.*





TABLE 1.—Changes in the levels of standard piece and time rates, 1853-1909.

	Blackburn and Uniform weaving lists.	Oldham spinning list.	Bolton (self-actor) spinning list.	Ashton spinning list.	Preston spinning list.	A private firm in the North and North-East Lancashire Association's district.				Oldham private cardroom females, 1 time work.	Bolton private cardroom females.	Oldham card- and blowing-room males.
						Cardroom females.	Grinders.	Throstles and rings.	Weaving.			
1853.....	100	—	—	—	—	—	—	—	—	—	—	—
'53.....	110	—	—	—	—	—	—	—	—	100	—	—
'54-55.....	100	—	—	—	—	—	—	—	—	100	—	—
'56.....	100	—	—	—	—	—	—	—	—	105	—	—
'57.....	100	—	—	—	—	—	—	—	—	105	—	—
'58.....	100	—	100	—	—	—	—	list net	—	105	+ 1s.	—
'59.....	100	+ 5 per cent.	100	—	100	—	—	—	—	105	+ 6d.	—
1860.....	103	—	105	100	107½	—	—	—	—	110	+ 6d.	—
'61.....	100	— 5 per cent.	100	90	100	—	—	— 5 per cent.	—	110	—	—
'62.....	100	— 5 "	100	90	100	—	—	—	—	110	—	—
'63-64.....	100	—	100	90	100	—	—	—	—	110	—	—
'65.....	100	+ 5 per cent.	100	100	100	100	100	+ 10 per cent.	100	120	—	—
'66.....	100	+ 5 "	105	110	107½ <sup>a</sup>	105	107½	+ 5 per cent.	110	120	+ 6d.	—
'67.....	100 <sup>b</sup>	—	100	100	102½	100	102½	—	105	130	+ 6d.	—
'68.....	100	100	100	100	102½	100	102½	100	105	130	—	—
'69.....	95	95	95	95	92½	90	92½	90	91½	130	—	—
1870.....	100	100	100	100	97½	95	97½	95	96½	130	—	—
'71.....	100	100	100	105	102½	100	102½	100	101½	140	+ 1s.	—
'72.....	100	100 <sup>c</sup>	105	105	102½	100	102½	100	101½	140	+ 6d.	—
'73.....	100	100	105	105	102½	100	102½	100	101½	140	+ 6d.	—
'74.....	100	100	100	105	102½	100	102½	100	101½	140	—	—
'75.....	100	100	100	105	102½	100	102½	100	101½	150	+ 6d.	—
'76.....	100	100 <sup>a</sup>	100	105	102½	100	102½	100	101½	150	+ 9d.	100
'77.....	100	95	95	100	102½	100	102½	100	101½	165	— 9d.	95
'78.....	90	85	100	95	92½	90	92½	90	91½	165	—	85

<sup>a</sup> A new list adopted with 5 per cent. advance to make prices equal to + 7½ per cent. on old list. The succeeding figures are 2½ per cent. above the levels under the 1866 list.

<sup>b</sup> List revised. Revision stated to equal slight reduction.

<sup>c</sup> First Oldham list.

<sup>d</sup> Second Oldham list, with "quick speed clause." This list effected an advance variously estimated, but probably 5 per cent.

TABLE 1 *Contd.*—Changes in the levels of standard piece and time rates, 1853-1909.

	Blackburn and Uniform weaving lists.	Oldham spinning list.	Bolton (self-actor) spinning list.	Ashton spinning list.	Preston spinning list.	A private firm in the North and North-East Lancashire Association's district.				Oldham private cardroom females. Time work.	Bolton private cardroom females.	Oldham card- and blowing-room males.
						Cardroom females.	Grinders.	Throstles and rings.	Weaving.			
'1879.....	85	80	90	85	87½	85	87½	85	86½	150	90 <sup>a</sup>	85
'1880.....	85	85	95	90	92½	90	92½	90	86½	150	95	90
'81-82 .....	90	90	95	95	92½	90	92½	90	91½	150	95	95
'83.....	85	90	95	95	92½	90	92½	90	86½	150	95	95
'84.....	90	90	95	95	92½	90	92½	90	91½	150	95	95
'85-87 .....	90	85	90 <sup>b</sup>	90	92½	90	92½	90	91½	150½	90	85
'88-89 .....	90	90	95 <sup>b</sup>	95	97½	95	97½	90	91½	157 <sup>c</sup>	95	93½
'1890.....	90	90	100	100	97½	95	97½	90	91½	180	100	93½
'91.....	90 <sup>d</sup>	95	100	100	102½	100	107½	95	91½	189	100	102½
'92.....	90	95½	100	100½	102½	100½	107½	95½	91½	189	100	102½
'93 98 .....	90½	92	100	97	99½	97	104½	92	91½	189	100	99½
'99.....	92½	95	100 <sup>b</sup>	100	102½	100	107½	95	94	189	100	102½
'1900-02 .....	92½	100	105	105	107½	105	117½	100	94	198	105	113½
'03-04 .....	92½	100 <sup>f</sup>	105	105	107½	105 <sup>f</sup>	117½	100 <sup>f</sup>	94	198 <sup>f</sup>	105	113½ <sup>e</sup>
'05.....	97	100	105 <sup>g</sup>	105 <sup>f</sup>	107½	105	117½ <sup>f</sup>	100	99	198	105	113½
'06.....	100	105	105 <sup>h</sup>	110	112½	110	122½	105	101½	207	110	118½
'07.....	100	110	110	115	117½	115	127½	110	101½	216	115	124½
'08.....	100	110	110	115	117½	115	127½	110	101½	216	115	124½
'09.....	100	105	105	110	112½	110	122½	105	101½	207	110	118½

<sup>a</sup> Change to piece rates and reduction of 10 per cent. later in the year.<sup>b</sup> Card and blowing-room operatives' wages have followed the changes in this series throughout, but in 1888, 1890, and 1900 male operatives received advances of 10 per cent.<sup>c</sup> Change to payment by piece rates. 180 is the equivalent computed level.<sup>d</sup> Uniform list.<sup>e</sup> Universal list for revolving flat cards agreed upon.<sup>f</sup> 5 per cent. net bonus to spinners, piecers, and card-room hands, for twelve weeks in September, October, November, and December.<sup>g</sup> Card and blowing-room female operatives, 110. Male operatives advanced 5 per cent.<sup>h</sup> Card and blowing-room female operatives, 115. Male operatives advanced 5 per cent.

January 1, 1875, the legal normal week for operatives included in the Acts remained at 60, and this, of course, practically fixed the hours for male adults at 60 also. In 1871, however, the hours were reduced to 59 in the Manchester, Oldham, and Ashton districts. From January 1, 1875, until January 1, 1902, the hours were 56½; since that date they have been 55½.

*Average earnings in various districts and occupations.*

We have now to consider the statements relating to the earnings of various classes of operatives. For this purpose many thousands of figures exist, and the elementary question of tabulation becomes one of great difficulty. Various methods have been adopted in the following tables, and to save continual references to the sources of individual figures, a general table of references has been compiled in which each authority is given a number. Where only one statement or series of statements is given from any particular authority, the number only of that authority is stated in the "authority" column. Where two or more statements relating to the same years are given by the same authority, they are indicated by a sub-letter, thus, 15a, 15b, &c. Thus, so far as possible, the directly comparable statements have the same reference number and sub-letter. Where one authority, *e.g.*, Schultze-Gaevernitz, uses the figures of an earlier authority for comparison with statements at first-hand, the comparison is indicated either by using the same authority index and sub-letter, or by footnote. In any case, statements for the same locality having exactly the same authority index, whether with a sub-letter or not, are directly comparable.

The list does not pretend to be a complete bibliography of the history of the cotton trade, but only a list of sources of wage statistics. Students wishing to study the industry from other points of view are referred to the excellent bibliography given in Prof. S. J. Chapman's *The Lancashire Cotton Industry*, Manchester, 1904.

*List of references containing wages statistics relating to the cotton trade.*

- 1 *Wage census*, 1886. C-5807, 1889.—
- 2     "             1906. Cd-4545, 1909.
- 3 *Returns of wages*. C-5172, 1887.
- 4 A. Ure. *The cotton manufacture of Great Britain*, 1833 and 1861.
- 5     "     *The philosophy of manufactures*, 1835 and 1861.
- 6 Edward Young. *Labour in Europe and America*. Washington, 1876.
- 7 *Labour Commission*. Reports on the employment of women.  
C-6984-xxiii, 1893.
- 8     "             Evidence, &c.
- 9 Return of Factory Inspectors. H.C. 440 of 1871.
- 10 George Lord to Commission on Trade depression, 1886. First and  
second reports.
- 11 G. von Schultze-Gaevernitz. *The cotton trade*, 1895.
- 12 Thomas Ellison. *The cotton trade of Great Britain*, 1886.
- 12A     "     Article on Cotton in *Chambers' Encyclopædia*, 1887.
- 12B     "     *Hand-book to the cotton trade*, 1858.



- 13 F. Merttens. *The hours and cost of labour in the cotton industry at home and abroad. Transactions of the Manchester Statistical Society, 1893-94.*
- 14 Robert Montgomery. *Manchester in 1834 and 1884. Transactions of the Manchester Statistical Society, 1884.*
- 15 J. R. Macculloch. *Statistical account of the British Empire, 1830 and 1846.*
- 16 H. Dunckley. *Charter of the nations, 1854.*
- 17 Private inquiries and correspondence.
- 18 Industrial Remuneration Conference Report, 1886.
- 19 International Textile Congress Reports, 1893 and 1906.
- 20 Factory Inspector's Report, 1883. Mr. Henderson.
- 21 U.S.A. Consular Report, 1884. *Labour in foreign countries.*
- 22 P. Gaskell. *Artisans and machinery, 1836.*
- 22a       "       *Manufacturing population of England, 1833.*
- 23 G. R. Porter. *Progress of the nation, 1851.*
- 24 J. C. Symonds. *Arts and artisans at home and abroad, 1839.*
- 25 *Cotton and woollen mills of Europe.* U.S.A. Consular Report, 1882.
- 26 *Report of Factory Inspector.* xxii of 1842. -
- 27       "       xxv of 1845. -
- 28       "       xxii of 1849. - *Operation of ten hours day.*
- 29       "       xxiii of 1850.
- 30       "       xxiv of 1866.
- 31       "       xiv of 1868-69.
- 32       "       xiv of 1871.
- 33       "       xiii of 1873.
- 34 D. Chadwick. *On the rates of wages in Manchester and Salford and the manufacturing districts of Lancashire during the twenty years from 1839 to 1859. Journal of the Statistical Society, 1860.*
- 35 G. P. Bevan. *Industrial classes and industrial statistics, 1877.*
- 36 Edwin Chadwick. *Address on Economy and trade. Social Science Association, 1864.*
- 37 J. Watts. *Article on Cotton in Encyclopædia Britannica, ninth edition.*
- 38 S. J. Chapman. *A Reply to the Report of the Tariff Commission on the Cotton Industry. Manchester, 1905.*
- 39 Reports of the Labour Department of the Board of Trade, on *Changes in wages and hours of labour, for the year indicated.*
- 40 Report of the Commission on *Employment of children in factories, 1883.*
- 41       "       *Committee on Emigration, 1827.*
- 42 Reports of the Commission on *Artizans and machinery, 1825.*
- 43 *Manchester Guardian, 27th April, 1844. -*
- 44 *The Beehive, afterwards The Industrial Review, 1866-79.*
- 45 J. Haslam. *Article in The Woman Worker, 9th Oct., 1908.*
- 46 McConnell and Co., Ltd. *A century of fine cotton spinning. Manchester, 1906.*
- 47 *Report on Strikes and lockouts of 1892.* C-7403, 1891.
- 48 *Fourth report on Trade unions.* C-6475, 1891.
- 49 U.S.A. *Consular Report, 1878. Wages in Europe and America.*
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- 53 Bridges and Holmes. Report to the Local Government Board on  
*Proposed changes in ages and hours in textile factories.* C-574, 1873.
- 54 *Report of the Poor Law Commissioners.* British Museum, xxxv of  
1842.
- 55 Leone Levi. *Wages and earnings of the working classes*, 1885.
- 56 John Strang. *Money-rate of wages of labour in Glasgow and west of  
Scotland. Journal of the Statistical Society*, 1857; and  
*Money-rate of Wages in Glasgow and west of Scotland  
in 1851, 1856 and 1858. Journal of the Statistical  
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- 57 Robert Halstead. *Variation of wages in some labour co-partnership  
workshops.* The Labour Association, 1901.

### *Manchester and District.*

In any question of comparison of the wages of cotton operatives, the most important district is Manchester, not because it is the most important centre of cotton spinning and manufacturing, for this it has long ceased to be, but because it has almost invariably been the centre of previous investigations, and by far the largest proportion of our material relates to the Manchester district. Unfortunately we are, with very few exceptions, left in doubt as to the area this district is intended to cover. For many purposes it is still the centre of the industry. The chief offices of the Employers' Federation and the Operatives' Federation are still there, and statements made by officials of either side regarding the Manchester district may be intended to apply to the whole Federation area, including Oldham, Bolton, Leigh, Ashton, Rochdale, Bacup, Stockport, and possibly even Preston, Blackburn, and Burnley, or may only be intended to apply to Manchester and Salford, and the immediate neighbourhood. In the three great census inquiries of the Children's Employment Commission of 1833, and the Board of Trade in 1886 and 1906, Manchester means a limited though undefined area, covering Manchester and its immediate neighbourhood. In Chadwick's important statements for 1839, 1849, and 1859 we have figures which, from the title of his paper in the *Journal of the Royal Statistical Society*, 1860, and from internal evidence, are intended to cover Manchester, Salford and Lancashire, but when these were reprinted by Porter, in the *Tables of the Revenue*, and by the Board of Trade in the *Returns of Wages*, 1830-86, they are given as for Manchester and district. Statements made by factory inspectors, relating to a single mill, may be said to relate to a mill in the Manchester district, and yet actually to be from the records of a mill 10 or even 20 miles from the Manchester Exchange. After consideration, it has been thought best to tabulate all these statements relating to Manchester side by side, as well as those intended to apply to the Lancashire and Cheshire cotton area, indicating, so far as possible, the area the statement is intended to cover. Our main reason for this is that Chadwick's statements certainly depend mostly on information relating to Manchester in the narrower sense, and later investigators like Bevan, Baker, Ellison and Merttens have made statements in direct comparison

with Chadwick, applying them more or less to the whole Lancashire and Cheshire industry. Other statements relating definitely to the other most important centres will be tabulated under the heading of those centres, and published in later articles.

The cotton trade divides itself, for purposes of wage comparisons, into three main branches, namely, carding (breaking up the bales and preparing the cotton by means of scutchers, carding engines, and "frames"), spinning (which again divides into mule spinning and ring or throstle spinning), and weaving, with the processes subsidiary thereto. In these three branches there are very many definite and distinct occupations. The wage census of 1886 gives the wages of men under 69 separate occupations or sub-divisions. In that of 1906 many of these disappear, but, nevertheless, there are recorded wages for 22 occupations for men, 3 for lads and boys, 12 for women, and 4 for girls, and some of these are subdivided, while a large number have been classed together under "other men," "other women," &c. Several occupations which are not separately mentioned in 1906 are of importance, as applying to large groups of individuals. *e.g.*, rovers' doffers, ring-spinners' doffers, reachers-in, lap-tenters, weavers' tenters, &c. On the whole, it is not too much to estimate that from bale-breaking to cloth-looking and warehouse work there are between 50 and 80 separate and distinct occupations, each with its own method of payment. Where we have, as in the case of Manchester and district, independent statements for nearly every year for a century, and in some cases two, three, or even more statements by different authorities for one year, it is impossible, or, at least, inadvisable, to put all these statements into one table.<sup>2</sup> In the case of towns like Oldham, Blackburn, &c., the information is not so unwieldy, and we can bring it together. For Manchester, therefore, the material has been tabulated separately for card and blowing-room males; card and blowing-room females, throstle and ring-spinning, and doubling; mule spinning; reeling, winding, warping, weaving, dressing, and sizing. The question of changes in numbers employed is discussed in the Appendix.

This method has the advantage of enabling us to discuss, with the actual figures before us, changes which have taken place in the status of the occupation, and the difficulties and limitations of our figures. All the comments on figures relating to particular occupations in the Manchester district will apply more or less to other centres, and if our study of the most important and most difficult centre is sufficiently detailed, we can confine ourselves to purely local details when considering the tabulation for other localities; also, we are building up our results as we proceed.

#### *Card and blowing-room males.*

Commencing with the card and blowing-room males, we find that statements are usually given for strippers and grinders, these

<sup>2</sup> An example of such a table may be seen in Bowley's *Wages in the Nineteenth Century*. Since that table was compiled much more information has been accumulated.

being the chief class, and less usually for carders, under-carders, mixers, scutchers, lap-tenters, and lap-carriers. Sometimes these are all thrown together as card-room hands, while at other times it is obvious that the term "card-room hands" excludes the mixers and scutchers, or cotton and blowing-room employés. Practically none of these workers do exactly the same work as did their predecessors of half-a-century ago, but the transition will have been gradual, and the type of operative will have remained unchanged except that the work is now probably more skilled. Changes in their wages have generally been regulated by changes in spinners' rates, but they have at times received special advances either when the spinners' rates have remained unchanged, or, as on three occasions at least, by receiving advances of 10 per cent. when pieceworkers and spinners have only received 5 per cent.

Further information about these operatives will be given later under the Oldham section, in connection with the Oldham and universal card lists. For the Manchester district it is only necessary to give the statement in Table 2.

This evidence is difficult to summarise. Assuming that the statements for card-room males refer mainly to "strippers and grinders," we must accept 15s. to 17s. or 18s. as representing the early years, the statement of a carder to the Commission on Artisans and Machinery of 16s. from 1819 to 1822 fairly substantiating these figures. A reduction seems afterwards to have set in, for the various statements for 1836 are somewhat lower, indicating perhaps 14s. 6d., and by 1841 13s. The Reports of the Factory Inspectors for 1841 several times mention reductions of 10 per cent. having taken place for card-room operatives. An advance by 1845 seems clearly established, perhaps to 14s. 6d. or 15s. Then came the depression and the reduction of hours by the Ten Hours Act, and 12s. 6d. or 13s. seems to fit the evidence for 1849-50. Series 30a shows a 10 per cent. advance in 1853, and a return to the 1850 level in 1854. By 1859-60 the level seems about equal to 1845, advancing after the cotton famine to 16s., and rising rapidly in the early 'seventies to about 22s. or 23s. A reduction took place after to about 21s. 6d., perhaps less in 1879, when the lowest point was reached. The *Returns of Wages* indicates a lower figure for 1883 than for 1880, but this is not borne out by other evidence. From 1886 to 1906 the advance in Manchester was from 21s. 5d. to 28s. 11d., and in Lancashire and Cheshire from 20s. 4d. to 29s. 5d. From the lowest point in the middle of the century to 1906 the advance has been not less than 120 per cent.

Scutchers have not progressed so much. The 1906 census does not state them separately for Manchester, but for Lancashire and Cheshire they advanced from 18s. 10d. in 1886 to 25s. 9d. in 1906. Probably their wages moved very closely with those of strippers and grinders up to 1886, being about the same rates in Manchester but rather lower in other places, and since have advanced by about the equivalent of the general advances to card and blowing-room males, 35 per cent., without any additional increments from improved machinery such as have accrued to strippers and grinders.

TABLE 2.—*Manchester and district. Average earnings of card and blowing-room males for an ordinary week's work, 1796-1906.*

Year.	Scutchers.	Head carder.	Under carder.	Strippers.	Grinders.	Card-room males.	Authority.
1796...	s.	s.	s.	s.	s.	s.	46
1806...	—	20 to 28*	—	—	—	—	4a
'11...	—	35	—	—	—	15, 17	4a
'15...	—	35	—	—	—	15, 17	4a
'18...	—	40	—	—	—	15, 18 6	4a
'19-22	—	18	—	—	—	15, 18	4a
'24...	—	34	—	—	16	—	42
'26...	—	40	—	—	—	15, 17 9	4a
'32...	—	23, 27	16 and up	10, 12	10, 14	—	43
'33...	—	30	—	—	—	15, 17 9	4a
'33...	—	—	—	—	—	14	19a
'33...	—	23 6	—	—	—	—	4 and 40
'33...	—	26 2	—	—	—	—	S. Lancs.
'36...	—	—	—	—	—	—	4 and 30
'36...	—	—	—	14, 16	—	—	Manchester
'39...	—	25	—	13	—	—	26b
'40...	—	—	—	11	13	—	26d
'41...	—	—	—	—	—	—	3 and 34
'41...	—	—	—	13, 15	—	12, 16	15a
'41...	—	—	—	12	—	—	26b
'41...	—	—	—	12, 13	—	—	26d
'41...	—	—	—	11	12, 13	—	26g
'41...	—	—	—	—	14	—	26h
'41...	—	—	—	—	—	12, 15	15a
'41...	—	—	—	—	—	12, 18/6	15a
'42...	—	—	—	—	—	13, 16	15a
'43...	—	—	—	—	—	14, 16	15a
'44...	—	—	—	—	—	—	15a

\* Earlier in the year, 2s. They ranged from 20s. to 28s., and one was engaged at 25s.



TABLE 2—Contd. *Manchester and district. Earnings of card and blowing-room males.*

Year.	Seutchers.	Head carder.	Under carder.	Strippers.	Grinders.	Card-room males.	Authority.
1844.....	s.	s.	s.	s.	s.	s.	43
'44.....	—	25, 35	16, 20	14, 16	13, 16	—	3 b
'44.....	—	—	—	—	—	13/6½	3 c
'45.....	—	—	—	—	—	15	15 a
'46.....	—	—	—	—	—	14, 16/6	15 b
'46.....	—	—	—	—	—	10, 21	3 b
'47.....	—	—	—	—	—	11/4	3 b
'48.....	—	—	—	—	—	7, 9*	3 b
'48.....	—	—	—	—	—	12	28
'49.....	—	28	—	12	13	11/10½	3 and 34
'49.....	—	—	—	—	—	—	3 b
'49.....	—	—	—	—	—	12	3 c
'50.....	—	27	—	—	—	12/6	10 c
'50.....	—	—	—	13/6	13/6	—	10 a
'50.....	—	—	—	10/6	10/6	—	10 b
'50.....	—	—	—	11	11	—	30 a
'53.....	—	—	—	14	14	—	30 a
'54.....	—	—	—	15/4	15/4	—	30 a
'59.....	—	28	—	14	14	—	30 a
'60.....	—	—	—	14	15	—	3 and 34
'60.....	—	—	—	17	17	—	30 a
'60.....	—	—	—	13	13	—	30 a
'60.....	—	—	—	14	14	—	10 a
'65.....	—	—	—	16	16	—	10 b
'70.....	—	—	—	—	21/6	—	30 a
'70.....	—	—	—	16	16	—	10 d
'70.....	—	—	—	17	17	—	10 a
'71.....	—	—	—	18	18	—	10 b
'71.....	—	—	—	21	21	—	9 a
'71.....	—	28, 30	21	21	21	—	9 b

\* Short time.



The wage of the carding overlooker is so much a matter of individual bargain that we may at once conclude that while there is substantive evidence of a considerable advance, and the figures of the 1833 census, Chadwick, and the census of 1886 and 1906 are probably representative, there is not enough evidence to justify our attempting to include them in any summary. To a lesser degree this applies to the under-carder, who is presumably included in the statements for overlookers in the sources above-mentioned. Under the Universal List for Cards, provision is made for extra payment to the grinders if no under-carder is employed. Where the quartiles range from 32s. 6d. to 50s. (as in the 1906 census), and the extremes much greater, no one statement is typical, and the only evidence of advance worth consideration is from 23s. 6d. in 1833 to 25s. in 1839, 28s. in 1849 and 1859, 28s. up to 35s. or more in the 'seventies, 25s. to 37s. 11d. in 1886, average 33s. 1d., and 32s. or less to 50s. or more in 1906, average 39s. 2d. From 1833 to 1886 the advance was 36 per cent.; 1886 to 1906, 22 per cent.; and 1833 to 1906, 67 per cent. These form about  $1\frac{1}{2}$  per cent. of the men employed.

*Card and blowing-room females, and throstle spinning.*

The tending of the preparatory machines after carding has always been the work of women and girls. Starting with the drawing frame and the roving frame, intermediate processes were introduced until to-day we may have combing before drawing; drawing, combing, slubbing, intermediate roving, and roving, before the cotton is ready for the mule. Throstle spinning has always been an alternative to mule spinning, and the throstle of the early part of the century has been gradually superseded by the "ring" of to-day, ring spinners being in the direct line of succession, just as self-actor minders are to the old hand mule spinners. One curious result of these changes should be noticed. In the early days of the industry the roving frame tenters were the highest paid, the slubbers varied but were generally the lowest, with the drawing frame tenters just a little above. To-day, the average earnings are generally the other way about, except at Bolton, where the roving frame still yields the highest average wage.

The following tabulation gives the figures for the Manchester district:—

TABLE 3. — *Manchester and district. Average earnings of card and blowing-room females and throstle spinners for an ordinary week's work. 1803—1906.*

Year.	Blow-room females. <sup>a</sup>	Drawing frame tenters.	Slub tenters.	Inter. tenters.	Rover tenters. <sup>a</sup>	Unclassified tenters.	Little tenters (guis).	Doubblers.	Throstle and ring		Authority.
									Overlookers.	Spinners. <sup>b</sup>	
1803	s.	s.	s.	s.	s.	s.	s.	s.	s.	s.	40
'06	—	—	—	—	—	—	—	—	—	10/1½	4 <sup>a</sup>
'08	—	—	—	—	—	9	—	—	—	—	40
'09 10	—	—	—	—	15, 16	—	—	—	—	7/5½	46 <sup>c</sup>
'10	11 3	—	—	—	15 6	—	—	—	—	—	3
'11	5 6	—	—	—	8 5	9	—	—	—	—	4 <sup>a</sup>
'12-19	—	—	—	—	13, 15	—	—	—	—	—	46 <sup>c</sup>
'12	10 1	—	—	—	13 5	—	—	—	—	—	3
'13	8 8	—	—	—	11 8	—	—	—	3 8 to 9/6	—	40
'14-15	10	—	—	—	14	10	—	—	—	—	3
'15	—	—	—	—	—	—	—	—	—	—	4 <sup>a</sup>
'16 22	9	—	—	—	14	9†	—	—	—	10 5	3
'18	—	—	—	—	—	9	—	—	—	—	40
'19-21	—	—	—	—	—	—	—	—	—	—	42
'23	—	—	—	—	—	—	—	—	—	9/3½	40
'23 25	7	—	—	—	17/6	—	—	—	—	—	3
'24	—	—	—	—	—	9	—	—	—	—	4 <sup>a</sup>
'26	—	7 3, 8 3	7 9, 8 3	—	—	—	—	—	—	—	43
'28	—	—	—	—	—	9, 9/6	6, 7	—	—	9/1	40
'32	—	—	—	—	—	9 <sup>d</sup>	—	—	—	5 to 9/6	3
'33	—	—	—	—	—	6 to 14	3 to 4/6	—	—	8/5½	40
'33	—	9 3	9 3	—	—	—	—	—	—	—	22 <sup>a</sup>
'33	—	—	—	—	—	—	—	—	—	—	19
'33 <sup>e</sup>	—	7 6	7/5½	—	—	average 7/6½	—	—	22 4½	7/9	4 <sup>e</sup>
'33 <sup>f</sup>	—	8 6	8	—	8 7	average 8 6½	—	—	23 5	7 8	4 <sup>f</sup>
'34	—	—	—	—	—	9 6	—	—	—	—	14 <sup>A</sup>



TABLE 3—Contd. Manchester and district. Card and blowing-room females and throstle spinners.

Year.	Blow-room females. <sup>a</sup>	Drawing frame tenters.	Slub tenters.	Inter tenters.	Rover tenters. <sup>a</sup>	Unclassified tenters.	Little tenters (girls).	Doublers.	Throstle and ring		Authority.
									Overlookers.	Spinners.	
1834.....	s. —	s. —	s. —	s. —	s. —	s. 8/9	s. —	s. —	s. —	s. —	14B
'34.....	7/8	—	—	—	—	9/5	—	—	25	9/6	14C
'34.....	—	—	—	—	—	8	—	—	—	—	14D
'34.....	—	—	—	—	—	6/6	—	—	—	—	14E
'35.....	—	—	—	—	—	9	—	—	—	—	14H
'36.....	—	—	—	—	—	6/6	—	—	—	—	14F
'36.....	—	—	—	—	—	10/6	—	—	—	—	26a
'36.....	—	—	—	—	—	9, 9/6	—	—	—	—	26b
'36.....	—	—	—	—	—	9/6	—	—	—	—	26c
'36.....	—	—	—	—	—	7, 9	—	—	—	—	26d
'39.....	—	10/6	—	—	—	—	—	—	—	10/6	26f
'39.....	—	10	—	—	—	—	—	—	—	10	26f
'39.....	—	7/6	—	—	8	—	—	—	—	—	14J
'39.....	7	6/6	8	7/6	7/6	—	—	7	18	4, 7	3 and 34
40.....	—	—	7/6	—	—	7/6, 12	3, 6	—	—	8/6, 11	15
'41.....	—	—	—	—	—	7/6, 11/8	3, 6	—	—	8, 10	15
'41.....	—	—	—	—	—	7/6	—	—	—	—	26a
'41.....	—	—	—	—	—	8, 8/6	—	—	—	—	26b
'41.....	—	—	—	—	—	9	—	—	—	—	26c
'41.....	—	—	—	—	—	7, 9	—	—	—	—	26d
'41.....	—	10	—	—	—	—	—	—	—	9/6	26f
'41.....	—	8, 9	—	—	10, 11	—	—	—	—	1888-41	26g
'41.....	9	9	9	—	9	—	5, 7	—	—	9, 11	26h
'41.....	—	—	—	—	—	7/6, 10	3, 6/6	—	—	10	15
'43.....	—	—	—	—	—	7/6, 10	3, 7	—	—	8/6, 10	15
'44.....	—	—	—	—	—	8, 10	4, 7	—	—	8/6, 10	15

TABLE 3—Contd. *Manchester and district. Card and blowing-room females and throstle spinners.*

Year.	Blow-room females, <sup>a</sup>	Drawing frame tenters.	Slub tenters.	Inter. tenters.	Rover tenters, <sup>a</sup>	Unclassified tenters.	Little tenters (girls).	Doubblers.	Throstle and ring		Authority.
									Overlookers.	Spinners.	
1844.....	s.	s. 8, 10	s. 8, 10	s.	s.	s.	s.	s.	s.	s.	43
'44.....	—	—	—	—	—	8/9	—	—	—	—	3 b
'44.....	—	—	—	—	—	7/6	—	—	—	—	3 c
'45.....	—	—	—	—	—	8, 11	4, 6, 7	—	—	8	15
'45.....	—	—	—	—	—	8, 10	—	—	—	9/6, 10/6	3 b
'46.....	—	—	—	—	—	8, 10	2 to 6	—	—	10	15
'46.....	—	—	—	—	—	6/6	—	—	—	—	3 b
'47.....	—	—	—	—	—	3/4	—	—	—	—	3 b
'48-49.....	—	—	—	—	—	8/9	—	—	—	—	3 b
'48.....	—	—	—	—	—	7/9	—	—	—	—	28
'49.....	—	—	—	—	—	7/6	—	—	—	—	3 c
'49.....	7/6	7	8/6	8/6	8/6	—	—	7/6	7/6	7/6	3 and 34 s
'50.....	—	—	—	—	7/6	—	—	7/6	4/6, 7/6	—	10 a
'50.....	—	—	—	—	7/6	—	—	—	—	—	10 b
'50.....	—	8/3	—	8	8/3	—	—	—	—	—	10 c
'50.....	—	—	—	—	—	12	—	—	—	8/9	30 a
'53.....	—	—	—	—	—	13/2	—	—	—	9/8	30 a
'54.....	—	—	—	—	—	12	—	—	—	8/9	30 a
'59.....	8	8	9	9	9	—	—	9	24	5, 9	3 and 34 s
'60.....	—	—	—	—	11	—	—	—	—	10	10 a
'60.....	—	—	—	—	11	—	—	—	—	—	10 b
'60.....	—	—	—	—	—	13/6	—	—	—	11/9	30 a
'65.....	—	—	—	—	—	15	—	—	—	—	30 a
'70.....	—	—	—	—	14	—	—	—	—	13	10 a
'70.....	—	—	—	—	11/6	—	—	—	—	—	10 b
'70.....	—	10/6	—	—	9/6	—	—	—	—	—	10 d
'71.....	—	—	—	—	—	9, 12	—	—	—	—	9 a

TABLE 3—Contd. Manchester and district. Card and blowing-room females and throstle spinners.

Year.	Blow-room females. <sup>a</sup>	Drawing frame tenters.	Slub. tenters.	Inter. tenters.	Rover tenters. <sup>a</sup>	Unclassified tenters.	Little tenters (girls).	Doublers.	Throstle and ring		Authority.
									Overlookers.	Spinners.	
1871.....	s. 12	s. 12, 13/6	s. 13, 16/6	s. 16, 20	s. 13, 18	s. —	s. 7, 9/6	s. 12	s. 26	s. 11/6, 12 12, 15	35 <i>a</i> 9 <i>b</i>
'71.....	—	11	13	—	—	—	—	—	—	—	6 <i>a</i> 6 <i>b</i>
'72.....	—	—	—	—	—	—	—	12	—	12/6	53
'73.....	—	11	13 to 16	—	—	—	—	12/6	—	—	33
'74.....	12	12	11 to 16	—	—	—	6	10, 15	—	—	3
'74.....	—	—	—	—	—	11	—	—	—	—	51 <i>a</i> 51 <i>b</i>
'74.....	—	—	—	—	—	10/6	—	—	—	—	35 <i>b</i>
'76.....	13/6	14/3	—	13	15/6	—	—	11	—	—	35 <i>a</i>
'76.....	15	17/6	17/3, 20	14, 18	16, 20	—	9, 10	12, 15	30, 35	12, 14	3
'77.....	13/6, 14/2	17/6, 18/7	16/6, 18	—	17	—	6/6, 8/10	12	27/6	17/6	10 <i>a</i> 10 <i>b</i>
'77.....	—	—	—	—	19/6	—	—	—	—	15	10 <i>d</i>
'77.....	—	10/6	—	—	10	—	—	—	—	—	50
'77.....	—	—	—	—	—	10/6, 12	—	—	—	—	37
'77.....	14, 16	16, 18	16, 18	16, 18	16, 18	—	9, 10	14, 18	30, 35	12, 14	44
'77.....	—	16	—	18	18	—	—	—	32/6	11	49
'79.....	13/6	18	18	18	15	—	7/3	—	25	14	3
'80.....	—	14, 15/4	15	—	14, 20	—	9, 10	—	30, 35	12, 14	12
'82.....	—	12/6, 18/9	16, 24/3	14, 20/6	14, 20	—	—	—	—	12, 14	12
'82.....	12, 15	12/6, 18/6	16, 24	14, 20	14, 20	—	—	—	—	12, 14	3
'83.....	12/9	12/9	14/3	—	18	—	—	—	—	—	10 <i>a</i> 10 <i>b</i>
'83.....	—	—	—	—	18	—	—	—	—	15	10 <i>c</i> 10 <i>d</i>
'83.....	—	—	—	16/6	14	—	—	—	—	—	14 <i>A</i>
'83.....	—	11	—	—	10	—	—	—	—	—	
'84.....	—	10/6	—	—	—	15/3	—	—	—	—	

TABLE 3—Contd. Manchester and district. Card and blowing-room females and throstle spinners.

Year.	Blow-room females, <sup>a</sup>	Drawing room tenters.	Slub. tenters.	Inter. tenters.	Rover tenters, <sup>a</sup>	Unclassified tenters.	Little tenters (girls).	Doubblers.	Throstle and ring		Authority.
									Overlookers.	Spinners.	
1884.....	s.	s.	s.	s.	s.	s.	s.	s.	s.	s.	14 B
'84.....	12/9	—	—	—	—	16/6	—	—	—	—	14 C
'84.....	14	—	—	—	—	13/4	—	—	34	11	14 D
'84.....	13	—	—	—	—	14	—	—	—	—	14 E
'84.....	—	—	—	—	—	11	—	—	28	11	14 F
'84.....	—	—	—	—	—	10/6	—	—	—	—	14 H
'84.....	—	—	—	—	—	12/6	—	—	—	—	14 J
'84.....	—	10, 16 or 18	14	—	14	15	—	—	—	—	21
'84.....	10/9	17	16	16	16	—	7/2	—	28	12	52
'86.....	11/10	14/9	15/4		15/2 <sup>1</sup>		—	11/10	—	12/6	1 <sup>c</sup>
'86.....	11/8	13/8	14/1		13/9 <sup>1</sup>		7/9	—	26/6	10/5	1
'87.....	12, 15	—	—	—	—	—	—	—	30, 35	9, 14, 10, 20	12 A <sup>g</sup>
'87.....	—	—	—	—	—	—	—	—	—	12, 14	13
'90.....	—	—	—	—	19	—	—	—	—	17	10 <sup>a</sup>
'90.....	—	—	—	—	19/6	—	—	—	—	—	10 <sup>b</sup>
'91-92	—	—	—	—	—	17	—	—	—	14	7
'91-92	—	—	—	—	—	—	—	—	—	14, 15	7 <sup>a</sup>
'93.....	—	19	17/6	—	—	—	—	—	—	—	19
1906.....	—	20	19/8	19/2	19/3	18, 26 19/6 <sup>1</sup>	9, 10 <sub>h</sub>	—	—	—	19
'06.....	—	—	—	—	—	—	—	14	h	15/7	2 <sup>c</sup>
'06.....	—	18/4	17/10	19/5 16/10	16/7	16/4 <sup>1</sup>	h	12, 10	h	13	2 <sup>f</sup>
'06.....	12	19	19	17/1 20	22	—	10	—	—	—	45



Notes to Table 3.

<sup>a</sup> From 1810 to 1825 the rates given under blow-room females are for "pickers," and are from the *Returns of Wages*. The rates for rovers from 1809 to 1825 are for stretchers. See note <sup>c</sup> below.

<sup>b</sup> From 1803 to 1825 these rates would apparently be for water frame spinners as the throstle was not introduced until then. They were stated in 1833 as referring to throstle spinners.

<sup>c</sup> The rates are for women on "stretchers," which apparently did the work of the slubbing and roving frames. The following was the make-up of a mill in 1797: 12 carding engines, 18-in. cards; 20 heads drawing rovers; 2 stretching frames, 90 spindles each; 30 mules, 180 spindles each.—(*A Century of Fine Cotton Spinning*, p. 36.) Babbage speaks of "a machine called in the cotton manufacture a 'stretcher,' worked by one man," which produced as follows:—

	Lbs. of cotton spun.	Roving wages per score.		Rate of earnings per week.	
		s.	d.	s.	d.
1810.....	400	1	3½	25	10*
'11.....	600	0	10	25	0
'13.....	850	0	9	31	10½
'23.....	1,000	0	7½	31	3

and at another stretcher, the roving a little finer,

1823.....	900	0	7½	28	1½
'25.....	1,000	0	7	27	6
'27.....	1,200	0	6	30	0
'32.....	1,200	0	6	30	0

\* In 1810 the wages were guaranteed not to be less than 26s.

The only other references to stretchers are in the *Manchester Guardian* for April 29, 1844, where men stretchers were said to have earned 16s. to 23s. in 1826, and 13s. to 20s. in 1844, and in the *Returns of Wages*, which gives, 1832, 25s., 26s.

<sup>d</sup> These figures are from Authority 4a.

<sup>e</sup> South Lanes, and for 1886 and 1906 Lanes and Cheshire. In 1833 the exact area covered was Manchester, Stockport, Ashton, Glossop, Oldham, Bolton, Warrington, and one mill at Bury.

<sup>f</sup> Manchester only.

<sup>g</sup> The lower rates under spinners are for girls and the higher for women. In 1887 the 9s. to 14s. is for girls and the 10s. to 20s. for women.

<sup>h</sup> In 1906, blowing-room women were classed with "other women"; throstle spinners' overlookers were presumably classed with spinning overlookers generally, and little tenters were classed with "other girls."

<sup>i</sup> Average of all tenters. In 1906 the Manchester average includes tenters unclassified, average 11s. 11d.; and the Lancashire and Cheshire average includes unclassified tenters at 21s. 5d.

These figures are little better, at first sight, than chaos itself. All are apparently genuine and given in good faith, yet the range is so great that we can have 6s. 6d. and 9s. 6d. stated as the average for the same year in the same district. The key to the difficulty

spinning list of 1853, and the Burnley spinning list of 1867 are still in vogue, as is also the original Blackburn weaving list of 1853, which gave way generally to the uniform list in 1892, but is still used in some mills. In each case, except the universal lists for frames and cards, these lists have, from time to time, been modified to meet new conditions, or added to in provision for payment for extra or new kinds of work.

These and other lists may be studied in the reports of the Committee of the British Association on the Regulation of Wages by means of Lists in the Cotton Industry, 1887, and the report of the Labour Department on Standard Piece Rates of Wages and Sliding Scales, Cd-144, 1900.

In addition to the changes in the principal piece lists, I have been successful in obtaining statements from various firms of the changes in the levels of the special piece lists or standard wages in their own mills. Where these have followed exactly the changes in recognised standard lists operative in their particular district, the variations are not printed, but where the firms in question have made advances or reductions which have not been general in the locality, their successive changes are given in Table I, which shows the level of piece prices or time wages at the end of each year when the original starting point = 100.

This table commences with the foundation of the earliest list that is still to be found in operation. It may be noticed, however, there were reductions in 1847 of 10 per cent., and advances in 1853 of 10 per cent., which were nearly general throughout Lancashire. During 1871-75, too, we find many references in contemporary labour and local newspapers to advances to piecers, strippers and grinders and others. Some of these will be mentioned later in connection with tabulated statements for various districts.

The relation of these changes in standard price list levels to changes in the actual earnings of operatives whose wages they regulate will be discussed at a later stage.

As the hours of labour are regulated by the Factories and Workshops Acts, it will be useful to state the usual hours worked at various periods throughout the century. In 1795 they are said to have been "not infrequently 80 in the week."<sup>1</sup> From 1810 to 1825 they appear to have been 12 per day and 72 per week, and from 1826 to 1846, 69 per week. In 1847, the "Ten Hours" Act was passed, and the hours for young persons and women were fixed at 63 from July 1, 1847, and 58 from July 1, 1848. In 1850, another Act made these hours 60 weekly, and in 1853 the Acts were applied to "children." As no normal day was fixed for children until 1853—though a normal day was fixed for young persons and women in 1850—the Acts of 1847 and 1850 were evaded by the use of relays of operatives, and investigation indicates that 60 hours were usually worked from 1848 onwards. The trade was so depressed, however, in 1847-48, that any statutory duration of the normal week was only hypothetical, for very little full time was worked in Lancashire during this period. From 1853 until

<sup>1</sup> *A century of fine cotton spinning*, p. 54.

## SECTION II.

*Manchester and district—Contd.**Mule spinning.*

Probably the part of the cotton trade which has been most completely altered in character and structure during the nineteenth century is mule spinning. The difficulties in tabulation arise from the great range of earnings possible at any date, according to whether the counts spun are coarse, medium, or fine ; the mules long (that is, containing a large number of spindles), or short ; and, until recent years, whether the work was done on hand mules or self-acting mules. In the following tabulation (the figures being rarely stated definitely for any of the different classes of spinners) the statements are placed where they seem to fit best, but the classification is quite arbitrary.

TABLE 5.—MANCHESTER AND DISTRICT. *Average earnings in mule spinning for an ordinary week's work, 1804-1906.*

Year.	Hand mule spinners.			Self-actor minders.			Spinners' average.	Piecers.				Authority.
	Fine.	Medium.	Coarse.	Fine.	Medium.	Coarse.		Big.	Middle.	Little.	Scavengers' average.	
1804	s. 32/6, 33/6	—	s. —	s. —	s. —	s. —	s. —	s. —	s. —	s. —	s. —	4 a*
'10	42/6	—	20, 28	—	—	—	—	—	—	—	27/6, 31	3
'11	18†	—	20, 28	—	—	—	—	—	—	—	—	3
'12	30†	—	20, 28	—	—	—	—	—	—	—	—	3
'13	27†	—	20, 28	—	—	—	—	—	—	—	—	3
'14-22	32	—	20, 28	—	—	—	—	—	—	—	—	3
'14	44/6, 60	—	—	—	—	—	—	9/6, 10/6	—	—	27/6, 30	4 a*
'18-24	35	25	—	—	—	—	—	—	—	—	—	42
'23-25	—	—	20, 28	—	—	—	—	—	—	—	—	3
'23	—	—	—	—	—	—	26/7	—	—	—	—	23
'24	—	—	—	—	—	—	24/2	—	—	—	—	23
'25	—	—	—	—	—	—	29/8	—	—	—	—	23
'26	—	—	—	20, 27	—	12, 18	—	—	—	—	—	43
'27	—	—	—	—	—	—	26	—	—	—	—	23
'28	—	—	—	—	—	—	27/4	—	—	—	—	23
'29	—	—	—	—	—	—	28/11	—	—	—	—	23
'30	—	—	—	—	—	—	28/6	—	—	—	—	23
'31	—	—	—	—	—	—	30/2	—	—	—	—	23
'32	—	—	—	—	—	—	27	—	—	—	—	23
'32	—	—	—	—	—	—	29/10	—	—	—	—	23
'32	—	—	—	—	—	—	20, 25	—	—	—	1/6, 2/8	3
'32	—	—	—	—	—	—	—	—	—	—	4/7, 7	3

\* Very fine numbers. The piecers' wages are gross, and the number per spinner is not stated.

† Short time.



TABLE 5—*Contd.* MANCHESTER AND DISTRICT. *Average earnings in mule spinning.*

Year.	Hand mule spinners.			Self-actor minders.			Spinners' average.	Piecers.				Piecers' average.	Authority.
	Fine.	Medium.	Coarse.	Fine.	Medium.	Coarse.		Big.	Middle.	Little.	Scavengers.		
1833.....	s. 33/1	s. —	s. —	s. —	s. —	s. 16 4	s. 28/4	s. —	s. —	s. —	s. —	s. 5/7	3*
'33.....	33/3	—	—	—	—	—	—	8/6, 9/6	—	—	—	—	4
'33.....	33/8, 42/9	—	—	—	—	—	—	—	—	—	—	21, 22/6	4†
'33.....	30 to 40	—	—	—	—	—	27	—	—	—	—	—	4
'33.....	{ 25, 35			{ 18, 21			—	—	—	—	3, 4/6	4, 8	22
'33.....	—	—	—	—	—	—	27/2	—	—	—	2/9	5/10½	4 and 40†
'33.....	—	—	—	—	—	—	25/8	—	—	—	2/11	5/5	4 and 40§
'36.....	—	—	—	—	—	—	26	10/6	—	—	—	—	26 a
'36.....	—	—	—	—	—	—	30/8	9	—	—	4/6	—	26 b
'36.....	—	—	—	—	—	—	21	8	—	—	3/2, 4/6	—	26 c
'36.....	35, 40	—	—	—	—	—	30	9	—	—	—	—	26 d
'36.....	—	—	—	—	—	—	—	—	—	—	—	—	26 f
'38.....	44/2	—	—	—	—	—	—	—	—	—	—	29/6	26 g
'39.....	40, 42, 45	25	23	18	16	16	—	8	—	—	—	—	3 and 34
'40.....	—	25, 27	—	13, 19	—	—	—	10	—	—	2/6, 5/2	—	15
'41.....	—	24, 27	—	13, 20	—	—	—	10	—	—	2/6, 5/4	—	15
'41.....	—	—	—	—	—	—	16	7/6	—	—	—	—	26 a
'41.....	—	—	—	—	—	—	18, 18/6	9	—	—	—	—	26 b
'41.....	—	—	—	—	—	—	21	8	—	—	—	—	26 c

\* The figures are part of the census taken by the Children's Employment Commission. The details are, 1,479 spinners averaged 28s. 4d., and 2,944 piecers 5s. 7d. Two firms' averages were, A.B. 42 spinners, 16s. 4d., and C.D. 33 spinners, 33s. 1d.

† Very fine numbers. The piecers' wages are gross, and the number per spinner is not stated.

‡ Manchester. § South Lancs. || Piecers' gross earnings, number not stated.

TABLE 5—*Contd.* MANCHESTER AND DISTRICT. *Average earnings in mule spinning.*

Year.	Hand mule spinners.			Self-actor minders.			Spinners' average.	Piecers.				Authority.	
	Fine.	Medium.	Coarse.	Fine.	Medium.	Coarse.		Big.	Middle.	Little.	Scavengers.		Piecers' average.
'841	s. 35, 40	—	s. —	s. —	—	s. —	s. —	s. 9	—	6	—	s. —	26 <i>d</i>
'41	—	—	—	—	—	—	24	—	—	—	—	—	26 <i>f</i>
'41	—	—	—	—	—	—	25, 2	—	—	—	—	21/6	26 <i>g</i> *
'42	—	22 6, 27	—	—	13, 20	—	—	10	—	6	2 6, 5/2	—	15
'43	—	20 9, 29	—	—	13, 16	—	—	10	—	6	3, 5/2	—	15
'44	—	22, 30/6	—	—	13, 16	—	—	10	—	7	3, 5/8	—	15
'44	—	—	—	25, 30	—	12, 20	—	—	—	—	—	—	43
'44	—	—	—	—	—	14	—	—	—	—	—	7	3 <i>c</i>
'45	—	23 6, 32/7	—	—	16 1/2, 20 1/2	—	—	10/9	—	7/6	3 6, 5/6	—	15
'46	50 to 60	—	—	—	17, 19	—	—	—	—	—	—	—	15
'48	—	—	—	—	18 6	18	19 3	—	—	—	—	8/1	28
'49	36 to 40	21	21	—	—	15 6	—	8 6, 9	—	—	—	—	3 and 34
'49	38	—	—	—	—	16	—	11	6 6	5 8	—	7/9	3 <i>c</i>
'50	—	—	—	—	—	18	—	—	—	—	—	—	10 <i>d</i>
'50	—	—	—	—	—	—	—	—	—	—	—	—	10 <i>a</i>
'50	40	—	—	—	—	—	—	13	—	—	—	—	10 <i>b</i>
'50	—	—	—	—	—	—	20	—	—	—	—	—	10 <i>c</i>
'53	—	—	—	—	—	—	22	—	—	—	—	—	30 <i>a</i>
'53	—	—	—	—	—	—	20	—	—	—	—	—	30 <i>a</i>
'54	—	—	—	—	—	—	20	—	—	—	—	—	30 <i>a</i>
'59	30, 40, 42, 45	23	23	—	22	20	—	9, 10	—	—	—	—	3 and 34
'60	—	—	—	—	—	—	22, 27	—	—	—	—	—	30 <i>a</i>
'60	38	—	—	—	—	—	—	11	6/6	5/8	—	—	10 <i>d</i>

\* Piecers' gross earnings, number not stated.

TABLE 5--*Contd.* MANCHESTER AND DISTRICT. *Average earnings in mule spinning.*

Year.	Hand mule spinners.			Self-actor minders.			Spinners' average.	Piecers.				Piecers' average.	Authority.
	Fine.	Medium.	Coarse.	Fine.	Medium.	Coarse.		Big.	Middle.	Little.	Scavengers.		
1860.....	s.		s.	s.		s.	s.	s.	s.	s.	s.	s.	10 a
'60.....	—	—	—	—	—	18	—	—	—	—	—	—	10 b
'65.....	—	—	—	—	—	18	—	—	—	—	—	—	30 a
'70.....	36	—	—	—	—	—	30	15	11	6	—	—	10 d
'70.....	—	—	—	—	—	20, 22	—	—	—	—	—	—	10 b
'70.....	—	—	—	—	—	22	—	—	—	—	—	—	35 a
'71.....	—	—	—	—	—	—	24, 30	10, 16	—	6/6, 7	—	—	9 a
'71.....	45, 50	—	—	—	—	—	—	9, 10	—	6/6	2/6	—	6 a
'72.....	55, 65	—	—	—	—	—	—	10, 14	—	—	—	—	6 b
'72... {	49	—	34	—	—	—	—	15	10, 11	6, 7/6	—	—	6 b
'74.....	—	—	—	36	—	—	—	10, 15	9, 9/6	4, 4/6	3	—	51 c
'74.....	42	—	—	—	—	—	—	15	—	—	—	—	51 d
'74.....	42, 45, 47, 50	—	—	35, 8	—	—	—	11	7/6	5	—	—	3
'76.....	—	—	—	—	—	—	—	12, 15	—	8	—	—	35 b
'76.....	—	—	—	—	—	—	28, 4	13/6	—	—	—	—	35 a
'77.....	—	—	—	—	—	—	29, 35	11, 16	—	7/6	—	—	50
'77.....	—	—	—	—	—	—	27/6, 32	—	—	—	—	—	10 d
'77.....	53	—	—	—	—	—	—	16/6	11	6/3	—	—	10 a
'77.....	—	—	—	—	—	25, 28	—	—	—	—	—	—	10 b
'77.....	—	—	—	—	—	30	—	—	—	—	—	—	44
'77.....	—	—	—	—	—	—	34	—	—	—	—	—	37
'77.....	—	—	—	—	—	—	32, 40	14, 17	—	—	—	—	3
'77.....	—	—	—	—	—	—	29/8, 36	12/10, 14/6	—	—	—	—	49
'78.....	40, 45, 50, 55	—	—	42	—	—	—	17	—	8/6	3/6	—	—
'80.....	—	—	—	—	—	—	28/9	12/6	—	8/6	6	—	3

TABLE 5—*Contd.* MANCHESTER AND DISTRICT. *Average earnings in mule spinning.*

Year.	Hand mule spinners.			Self-actor minders.			Spinners' average.	Piecers.				Authority.	
	Fine.	Medium.	Coarse.	Fine.	Medium.	Coarse.		Big.	Middle.	Little.	Scavengers.		Piecers' average.
1882 .....	s.	s.	s.	s.	s.	s.	s. 23, 40	s. 11, 16	s.	s. 8, 11	s. 7/6, 8/6	s.	12
'83 .....	—	—	—	—	—	—	31	—	—	—	—	—	3
'83 .....	40	—	—	—	—	—	—	16	11	7	—	9/9	10 d
'83 .....	—	—	—	—	—	25, 28	—	—	—	—	—	—	10 a
'83 .....	—	—	—	—	—	29	—	—	—	—	—	—	10 b
'83 .....	—	—	—	—	—	—	—	16	—	—	—	—	10 c
'84 .....	52	—	—	34	—	26	—	15/6	—	11	—	—	52
'86 .....	43 8	—	—	37/9	33/11	—	35 9	15/3	—	10 10	7 2, 3 2	12/2	1 *
'86 .....	—	—	—	—	—	—	31/3	14/1	—	9/9	—	12/3	1†
'87 .....	—	—	—	—	—	—	23, 40	—	—	—	—	11, 20	12 A
'87 .....	—	—	—	—	—	28	—	—	—	—	—	—	13
'90 .....	—	—	—	—	—	30, 33	—	—	—	—	—	—	10 a
'90 .....	—	—	—	—	—	31	—	—	—	—	—	—	10 b
'91 .....	—	—	—	—	—	—	35	—	—	—	—	27	8†
'93 .....	—	—	—	—	—	—	37	—	—	—	—	—	19
'93 .....	—	—	—	—	—	—	36, 42	—	—	—	—	21	13
1906 .....	—	—	—	47 6	—	44 1	45 10	15/9	—	7/10	—	12/3	2 *
'06 .....	—	—	—	46	43	38 10	41 5	17/10	—	12	—	15/1	2†
'06 .....	—	—	—	—	—	—	40	—	—	—	—	11, 21	19

\* Manchester. In 1886 there were women and girl piecers. The wages in the table are for men and lads and boys. The female big piecers earned 1 s. 9 d., and the little-piecers 8 s. 6 d. A few girl piecers on hand mules earned 10 s. 1 d. The average in the final column includes all these.

† Lancashire and Cheshire. ‡ Piecers' gross earnings, number not stated.



As a general rule throughout Lancashire, and, indeed, the whole trade, spinners of fine counts have earned more than the spinning medium, and coarse counts respectively, but this is by no means universally true. Under the Oldham list before its revision in 1907, on a pair of mules of any particular length, the coarser the counts the higher tended to be the earnings, but the finer counts being generally spun in the modern mills, where mules are longer, this variation is obscured in a census. Under other lists the finer the count the greater the earnings on the same pair of mules. Again, wages on hand mules have usually been greater than those on self-acting mules, though at all times the best paid self-actor minder will have earned more than the lowest paid hand-mule spinner.

The change from hand-mule spinning to self-actor minding has taken place gradually, and commenced about 1836. In the districts using American cotton—Manchester (partly), Oldham, Preston, Ashton, &c.—the change was completed many years ago, hand mules being the exception and not the rule in the sixties and seventies. In the Egyptian cotton-using districts, Bolton, Stockport, and Manchester (partly), the change came later. Roughly speaking, the change was made first on coarse counts and gradually extended up through the various degrees of fineness. In Oldham, a fashion for self-acting set in in 1866-70; in Bolton there were very large numbers of mules self-acted some ten or fifteen years later. In all centres, large numbers of self-actors had been erected long before. Taking pairs of mules which were “converted” from hand mules to self-actors in the middle of the century, the consequent effect on earnings would be somewhat as indicated in the following case:—

	Hand Mules.	Self Actors.
	<i>s.</i>	<i>s.</i>
Spinner or minder.....	35	30
Cypher .....	15 } big	12
Middle piecer.....	10 } piecer	
Little piecer .....	5 or 6	7
Gross earnings .....	65 or 66	49

In recent years the earnings of spinners have tended to be much more uniform than formerly. In 1906, the lower quartiles of coarse spinners in Lancashire and Cheshire is 33*s.* 6*d.*, and the upper quartiles of fine spinners is 50*s.* 6*d.*, so that a range of from 30*s.* to 55*s.* is still possible, and either of these figures might be the average wage of all the spinners employed in a particular mill. Seventy years ago the range was greater, and anything from 15*s.* to 50*s.* might easily be the variations in the average from mill to mill. Piecers would vary less, but there might be one, two, or three piecers per spinner, and while the little piecers (lads) would not vary greatly, the big piecers might vary 5*s.* or more.

Perhaps the following general view is a fair approximation to the actual variations in spinners' earnings—sufficiently near at least to allow for the known movements and to point the rising and

falling periods. The estimate is intended to apply to the whole of the Lancashire and Cheshire area, but is more particularly applicable to Manchester and its more immediate neighbourhood until the seventies. Since that date the Manchester figures are of comparatively slight importance, and more detailed data are forthcoming from Bolton, Oldham, Preston and Blackburn :—

TABLE 6.—*Approximate estimates of spinners average wages (allowing for numbers employed in the various classes), 1806-1906.*

Class.	1806.	1810.	1814-22	1823.	1824.	1825.	1827.	1828.
	s.	s.	s.	s.	s.	s.	s.	s.
1 .....	Same	42 6	32	—	—	—	—	—
2 .....	as	33	28	—	—	—	—	—
3 .....	1833	24	24	—	—	—	—	—
Average....	—	30 1	26	23	21	25/8	22/6	24

Class.	1829.	1830.	1831.	1832.	1833.	1836.	1839.	1841.
	s.	s.	s.	s.	s.	s.	s.	s.
1 ... ..	—	—	—	—	33/3	40	42	40
2 .....	—	—	—	—	28	26	18, 25	18, 25
3 .....	—	—	—	—	22	16, 21	16, 23	16, 6
Average....	25 3	24/9	26/2	24/6	25/10	24/4	23/4	21/8

Class.	1845-46.	1849-50.	1853.	1854.	1859-61.	1866-70.	1872.	1874.
	s.	s.	s.	s.	s.	s.	s.	s.
1 .....	42	37	—	—	39 6	40	40	42
2 .....	23/3	18/6, 21	—	—	22 6	30	34	35/6
3 .....	18	18, 21	—	—	21/6	24	28	29
Average....	23 5	21/10	24	22	24/4	28 6	31/9	33/1

Class	1877.	1880.	1883.	1886.	1891-93.	1900.	1906.	Weights.
	s.	s.	s.	s.	s.	s.	s.	
1 .....	45	36	38/6	36/1	—	—	46	1
2 .....	36	32	34/9	} 30/8	{ —	—	43	3
3 .....	29/8	28/9	31			—	38/10	4
Average....	34	30/11	33/4	31/1	36	39	41/5	8

Rough though this generalisation is, I do not think it can be far wrong. The summary given later under the Oldham section corresponds very closely, but is based on entirely different data.

Class 1 is intended to apply to fine counts or long mules; Class 2 to medium counts, or mules of medium length; and Class 3 to coarse counts or short mules.

We have less information for piecers, who number approximately 2 to every spinner, and who used in the early days of the industry to more nearly number 3 to 1. The estimate given below is suggested as an approximation requiring to be filled in after study of the other

districts. We have it in our favour than any error in the case of piecers will probably be smaller proportionately than in the case of spinners, as the range of their wages is less. In 1906, for Lancashire and Cheshire, the census shows the following :—

		Average.	Lower Quartile.	Median.	Upper Quartile.	Number.
		s.	s.	s.	s.	
Big piecers .....	{ Time	18 4	16 6	18 6	20 6	5,971
Men .....	{ Piece	20 10	18 6	21	22	120
Big piecers ..	{ Time	16 7	15	16 6	18	2,880
Boys .....	{ Piece	17 5	15 6	17 6	19	44
Little piecers ..	{ Time	12	10 6	11 6	13 6	8,211
Boys .....	{ Piece	11 7	9 6	12	13 6	72
						9,015
						8,283

Lads and boys, big piecers, earn less than men. Generally, where a young big piecer is employed he gets less than a man would on the same pair of mules, and the little piecer gets the difference. There are cases of “joiner” big piecers, where two lads share equally the gross piecing wages according to the list prices, but the census does not show whether these are classed as big or little piecers. Probably the former, bringing down the “lads and boys” (big piecers’) averages.

The range of big piecer’s wages is probably about 6s., and of little piecers probably about 4s. 6d. At no time during the past hundred years will the range have been greater, and in any particular district it is not now, and probably never was, as great as that of the whole of Lancashire and Cheshire taken together. In most districts 3s. is the range between the upper and lower quartiles, and the greater range in the Lancashire and Cheshire figures is brought about by the low wages paid at Bolton and Leigh, where one-half of the big piecers range from 15s. to 16s. The errors involved in the following estimates, therefore, are not necessarily very great. If anything, the statements for the first half-century are too high.

TABLE 7.—*Approximate estimate of piecers’ average wages, 1814-1906.*

	1814.	1833.	1839-43.	1845.	1849.
	s.	s.	s.	s.	s.
Big .....	10	9	10	10 6	8 9
Middle .....	—	5 6	6	7	6 6
Little .....	—	3 6	5	5 6	5 6
Average .....	6 6	6	7	7 8	7

	1859.	1871.	1874-77.	1882.	1886.	1906.
	s.	s.	s.	s.	s.	s.
Big .....	10	12	14	14	14 2	17 9
Middle .....	6 6	7	8 6	9	9 3	12
Little .....						
Average .....	8 3	9 6	11 3	11 6	11 9	15

Up to 1886, this estimate allows for half-time piecers; in 1906 we have no information about them. Probably the average for 1906 is too high, perhaps by 3%, but as with all other statements from the 1906 census, we have no means of correcting our figures for the small groups of girls and boys employed, whether full time or half-time, in occupations mainly carried on by young persons and adults.

*Winding, reeling, warping, and weaving.*

The difficulties in dealing with statements of weavers' earnings are very similar to those relating to spinners. The possible variations are so great and the unknown is frequently of so much importance, that we can never be sure of our results. Weavers may have 2 broad looms, or 2, 3, 4, or even 6 narrow looms, or even broad and narrow looms may occasionally be worked by the same weaver. Four loom weavers may have a "tenter," or may not; the tenter may be a full-timer or half-timer, and the wage stated may be net or gross, out of which the tenter has to be paid. It is quite certain that the number of looms per weaver has increased since the introduction of power loom-weaving, but we have very little means of knowing what that number has been except in 1886 and 1906. In the "thirties" 2 looms were most usual, 3 looms less usual, and 4 looms very unusual, and always with a tenter. We have no record in contemporary writings of one-loom weavers (except on broad looms, weaving sheetings, where the earnings are much higher), yet they are mentioned in the 1886 census, and old weavers and overlookers have informed me that one-loom weavers were not at all unusual until after 1860. Two important inventions made possible a really tangible increase in the number of looms for weavers, namely, the weft fork and the automatic temple. The weft fork, adding to the automatic qualities of the loom, made a greater speed possible, and the automatic temple, whereby the cloth as woven was automatically kept stretched instead of the loom having to be stopped after every few inches were woven to alter the stick which was stretched across to keep the woven cloth tight, made the minding of one more loom per weaver immediately possible.

In 1886 the average number of looms per weaver (omitting broad looms and fustian looms) was 3·3; in 1906, 3·44 (omitting men two-loom weavers, who were mainly broad loom weavers) was the average. In Manchester, in 1886, there were 2·48 looms per weaver, and in 1906, 2·93, or half a loom per weaver less than the average for Lancashire and Cheshire. Manchester has thus in weaving, as well as in the other branches of the trade, long ceased to be typical. Most of our statements for years later than 1850 refer to, or are intended to embrace, the whole Lancashire and Cheshire area, and we must therefore ignore the Manchester loom average per weaver, and take that typical of the wider area. Summing up all the evidence obtainable, including individual statements from employers in various parts of Lancashire, the following seems the most probable average number of looms per weaver. From the introduction of the power loom, 2, rising to about 1850, 2½, increasing



slowly to 1860 to  $2\frac{2}{5}$ , after the cotton famine a more rapid increase to  $2\frac{4}{5}$  by 1870, and slower increase to  $3\frac{1}{5}$  by 1877. By 1886 the average had advanced to 3.3, and 1906, 3.44. The advance has, therefore, been very slow since the middle "seventies."

The details relating to the other occupations speak for themselves. They are fairly consistent for winding, reeling, and warping, but much less consistent for beaming, drawing-in, twisting-in, dressing, and sizing. Overlookers or tacklers vary considerably, but their wages are much less a matter of individual bargain than those of spinning and carding overlookers. As a rule they are paid at rates varying from 1s. 4d. to 2s. per 1l. on the earnings of the weavers whose work they superintend, and will have from 70 to 90 looms in their charge. If the average number is 80 looms, and we take the average per loom at 6s., this represents about 1s. 8d. per weaver, or 42s. per tackler.

The following table contains the statements relating to this branch of the trade in Manchester and district:—

TABLE 8.—*Average earnings in weaving, &c., for an ordinary week's work. Manchester and district, 1797-1906.*

Year .....	1797.	1806.	1809.	1810.	1811.	1811.
Authority .....	46.	4a.	46.	3.	4a.	3.
	s.	s.	s.	s.	s.	s.
Winders .....	4/6*	—	—	—	—	—
Reelers .....	—	19, 30	12, 14	12	15	6
Warpers, M. ....	—	—	—	16	—	16
"    W. ....	—	—	—	—	—	—
Drawers-in .....	—	—	—	—	—	—
"    helpers ..	—	—	—	—	—	—
Twisters-in .....	—	—	—	—	—	—
Beamers .....	—	—	—	—	—	—
<i>Power loom weaving.</i>						
Overlookers .....	—	—	—	—	—	—
Weavers, 2 looms ...	—	—	—	—	—	—
"    3 " ....	—	—	—	—	—	—
"    4 " ....	—	—	—	—	—	—
"    6 " ....	—	—	—	—	—	—
"    average ....	—	—	—	—	—	—
"    per loom ....	—	—	—	—	—	—
"    helpers ....	—	—	—	—	—	—
Dressers .....	—	—	—	—	—	—
Sizers .....	—	—	—	—	—	—

\* Boys and girls.

TABLE 8—*Contd.* Average earnings in weaving, &c., Manchester and district.

Year .....	1812.	1813.	1814-20.	1815.	1818.	1821-22.
Authority .....	3.	3.	3.	4a.	4a.	3.
	s.	s.	s.	s.	s.	s.
Winders .....	—	—	—	—	—	—
Reelers .....	9 11	8/2	10	15	15	10
Warpers, M. ....	16	16	16	—	—	18
„ W. ....	—	—	—	—	—	—
Drawers-in .....	—	—	—	—	—	—
„ helpers .....	—	—	—	—	—	—
Twisters-in .....	—	—	—	—	—	—
Beamers .....	—	—	—	—	—	—
<i>Power loom weaving.</i>						
Overlookers .....	—	—	—	—	—	—
Weavers, 2 looms ...	—	—	—	—	—	—
„ 3 „ ...	—	—	—	—	—	—
„ 4 „ ...	—	—	—	—	—	—
„ 6 „ ...	—	—	—	—	—	—
„ average ...	—	—	—	—	—	—
„ per loom .....	—	—	—	—	—	—
„ helpers ....	—	—	—	—	—	—
Dressers .....	—	—	—	—	—	—
Sizers .....	—	—	—	—	—	—

Year .....	1823-25.	1824.	1826.	1827.	1832.	1833.
Authority .....	3.	4a.	4b.	41.	3.	4 and 4a.*
	s.	s.	s.	s.	s.	s.
Winders .....	—	—	9, 10/6	8, 10	8, 11	—
Reelers .....	10	12	—	—	—	—
Warpers, M. ....	16	—	—	—	—	—
„ W. ....	—	—	10, 12	10, 12	8, 11	12/3
Drawers-in .....	—	—	—	—	—	—
„ helpers .....	—	—	—	—	—	—
Twisters-in .....	—	—	—	—	—	—
Beamers .....	—	—	—	—	—	—
<i>Power loom weaving.</i>						
Overlookers .....	—	—	24, 30	—	—	24 6
Weavers, 2 looms ...	—	—	—	—	—	—
„ 3 „ ...	—	—	—	—	—	—
„ 4 „ ...	—	—	—	—	—	—
„ 6 „ ...	—	—	—	—	—	—
„ average ...	—	—	10, 12	—	13, † 16, 10 † 8, 12 †	12 6
„ per loom .....	—	—	—	—	—	—
„ helpers ....	—	—	—	—	—	—
Dressers .....	—	—	25, 30 {	20, 25 { 30, 40 }	28, 30	27
Sizers .....	—	—	—	—	—	—

\* Manchester.

† Men.

‡ Women.

TABLE 8—Contd. Average earnings in weaving, &c., Manchester and district.

Year .....	1833.	1833.	1833.	1834.	1834.	1834.
Authority .....	1 and 40.*	22.	19.	14 A.	14 B.	14 C.
	s.	s.	s.	s.	s.	s.
Winders .....	—	—	9/6	—	—	—
Reelers .....	—	7, 13	—	9	—	—
Warpers, M. ....	—	—	—	—	—	—
"    W. ....	10/11	—	—	—	—	—
Drawers-in .....	—	—	—	—	—	—
"    helpers ..	—	—	—	—	—	—
Twisters-in .....	—	—	—	—	—	—
Beamers .....	—	—	—	—	—	—
<i>Power loom weaving</i>						
Overlookers .....	26/3	—	—	1839. 25	—	—
Weavers, 2 looms ...	—	—	—	—	—	—
"    3    "    ....	—	—	—	—	—	—
"    4    "    ....	—	—	—	—	—	—
"    6    "    ....	—	—	—	—	—	—
"    average ....	10/11	10, 16	12/6	1839. 12/6	11	1842. 16
"    per loom ..	—	—	—	—	—	—
"    helpers ...	—	—	—	—	—	—
Dressers .....	27/10	—	—	—	—	—
Sizers .....	—	—	—	—	—	—

Year .....	1834.	1834.	1834.	1836.	1836.	1836.
Authority .....	14 D.	14 E.	14 F.	26 a.	26 b.	26 c.
	s.	s.	s.	s.	s.	s.
Winders .....	—	—	—	—	—	—
Reelers .....	—	—	7, 6	9, 9/6	—	—
Warpers, M. ....	—	—	—	—	—	—
"    W. ....	—	—	—	9, 9/3	—	—
Drawers-in .....	—	—	—	—	—	—
"    helpers ..	—	—	—	—	—	—
Twisters-in .....	—	—	—	—	—	—
Beamers .....	—	—	—	—	—	—
<i>Power loom weaving.</i>						
Overlookers .....	—	—	—	—	—	—
Weavers, 2 looms ...	—	—	—	—	—	—
"    3    "    ....	—	—	—	—	—	—
"    4    "    ....	—	—	—	—	—	—
"    6    "    ....	—	—	—	—	—	—
"    average ....	14/3	11	—	—	9/6, 10/6	10/6
"    per loom ..	—	—	—	—	—	—
"    helpers ....	—	—	—	—	—	—
Dressers .....	—	—	—	—	—	—
Sizers .....	—	—	—	—	—	—

\* Lancs and Cheshire (S. Lancs only in 1833).

TABLE 8—*Contd.* Average earnings in weaving, &c., Manchester and District.

Year .....	1836.	1839.	1839.	1838-41.	1839.	1840.
Authority .....	26 <i>f.</i>	26 <i>f.</i>	14 <i>s.</i>	26 <i>s.</i>	3 and 34.	15.
	<i>s.</i>	<i>s.</i>	<i>s.</i>	<i>s.</i>	<i>s.</i>	<i>s.</i>
Winders .....	—	—	—	—	5/6 G. 9/- W.	—
Reelers .....	—	—	—	8, 10	8/6, 9	6, 9
Warpers, M. ....	—	—	17/6	—	22	23, 7½
"    W. ....	—	—	—	—	—	—
Drawers-in .....	—	—	—	—	18/6	—
"    helpers .....	—	—	—	—	—	—
Twisters-in .....	—	—	—	—	—	—
Beamers .....	—	—	—	—	22	—
<i>Power loom weaving.</i>						
Overlookers .....	—	—	—	—	—	—
Weavers, 2 looms ...	12/1	11/6	—	—	9, 10	—
"    3 " ....	—	—	—	—	—	—
"    4 " ....	—	—	—	—	16, 17	—
"    6 " ....	—	—	—	—	—	—
"    average ....	—	—	—	—	—	11/1, 14
"    per loom .....	—	—	—	—	—	—
"    helpers ....	—	—	—	—	5	—
Dressers .....	—	—	—	—	20	—
Sizers .....	—	—	—	—	23	—
Year .....	1841.	1841.	1841.	1841.	1841.	1841.
Authority .....	15.	26 <i>a.</i>	26 <i>b.</i>	26 <i>s.</i>	24 <i>f.</i>	26 <i>s.</i>
	<i>s.</i>	<i>s.</i>	<i>s.</i>	<i>s.</i>	<i>s.</i>	<i>s.</i>
Winders .....	—	—	—	—	—	—
Reelers .....	7 5, 9	8, 8/6	—	—	—	—
Warpers, M. ....	24/2	—	—	—	—	—
"    W. ....	—	8, 9	—	—	—	—
Drawers-in .....	—	—	—	—	—	—
"    helpers .....	—	—	—	—	—	—
Twisters-in .....	—	—	—	—	—	—
Beamers .....	—	—	—	—	—	—
<i>Power loom weaving.</i>						
Overlookers .....	—	—	—	—	—	—
Weavers, 2 looms ...	—	—	—	—	10	7/6
"    3 " ....	—	—	—	—	—	—
"    4 " ....	—	—	—	—	—	—
"    6 " ....	—	—	—	—	—	—
"    average ....	10/2, 14/2	—	9, 10	9/6	—	—
"    per loom .....	—	—	—	—	—	—
"    helpers ....	—	—	—	—	—	—
Dressers .....	—	—	—	—	—	—
Sizers .....	—	—	—	—	—	—

TABLE S—*Contd.* Average earnings in weaving, &c., Manchester and district.

Year .....	1842.	1843.	1844.	1844.	1844.	1845.
Authority ..	15.	15.	15.	3b.	43.	15.
	s.	s.	s.	s.	s.	s.
Winders .....	—	—	—	—	10, 12	—
Reelers .....	7/7, 9	6/3, 9	5/10, 9	—	—	7 6, 9
Warpers, M. ....	24/3	24/5	24	—	—	24/1
„ W. ....	—	—	—	—	12, 15	—
Drawers-in .....	—	—	—	—	—	—
„ helpers .....	—	—	—	—	—	—
Twisters-in .....	—	—	—	—	—	—
Beamers .....	—	—	—	—	—	—
<i>Power loom weaving</i>						
Overlookers .....	—	—	—	—	24, 30	—
Weavers, 2 looms ...	—	—	—	—	—	—
„ 3 „ ....	—	—	—	—	—	—
„ 4 „ ....	—	—	—	—	—	—
„ 6 „ ....	—	—	—	—	—	—
„ average ....	9/10, 14/2	1/3, 14/2	3/4, 14/2	10/1	10, 12	11/3, 14 2
„ per loom .....	—	—	—	—	—	—
„ helpers ....	—	—	—	4/7	—	—
Dressers .....	—	—	—	—	30, 40	—
Sizers .....	—	—	—	—	—	—

Year .....	1845.	1845.	1845.	1845.	1846.	1846.
Authority .....	20a.	27a.	27b.	3b.	3b.	15.
	s.	s.	s.	s.	s.	s.
Winders .....	—	—	—	—	—	9, 11
Reelers .....	—	—	—	—	—	8, 9
Warpers M. ....	—	—	—	—	—	—
„ W. ....	—	—	—	—	—	9, 11
Drawers-in .....	—	—	—	—	—	—
„ helpers .....	—	—	—	—	—	—
Twisters-in .....	—	—	—	—	—	—
Beamers .....	—	—	—	—	—	—
<i>Power loom weaving.</i>						
Overlookers .....	—	—	—	—	—	—
Weavers, 2 looms ...	—	—	—	—	—	—
„ 3 „ ....	—	—	—	—	—	—
„ 4 „ ....	14/4	16/8	—	—	—	—
„ 6 „ ....	—	—	—	—	—	—
„ average ....	12 8	—	11/8	9/9	8/10	10, 16
„ per loom .....	—	—	—	—	—	—
„ helpers ....	5/6	—	—	4/6	4/3	—
Dressers .....	—	—	—	—	—	40
Sizers .....	—	—	—	—	—	—



TABLE 8.—*Contd. Average earnings in weaving, &c., Manchester and district.*

Year .....	1847.	1848.	1848.	1848-49.	1849.	1849.
Authority .....	3 <i>b</i> .	3 <i>b</i> .	18.	29 <i>a</i> .	3 <i>b</i> .	3 and 34.
	<i>s.</i>	<i>s.</i>	<i>s.</i>	<i>s.</i>	<i>s.</i>	<i>s.</i>
Winders .....	—	—	7/8	—	—	6½ G. 9 6 W.
Reelers .....	—	—	8/1	—	—	9 9 6
Warpers, M. ....	—	—	—	—	—	22
"    W. ....	—	—	—	—	—	—
Drawers-in .....	—	—	—	—	—	18/6
"    helpers .....	—	—	—	—	—	—
Twisters-in .....	—	—	—	—	—	—
Beamers .....	—	—	—	—	—	22
<i>Power loom weaving.</i>						
Overlookers .....	—	—	—	—	—	—
Weavers, 2 looms ...	—	—	—	—	—	9 10
"    3    "    ....	—	—	—	—	—	13
"    4    "    ....	—	—	—	—	—	16
"    6    "    ....	—	—	—	—	—	—
"    average ...	4/7	9	10	10/6	9/5	—
"    per loom .....	—	—	—	—	—	—
"    helpers ....	2	4 8	—	—	4/8	5
Dressers .....	—	—	—	—	—	20
Sizers .....	—	—	—	—	—	23

Year .....	1850.	1850.	1850.	1850.	1850.	1850.
Authority .....	10 <i>a</i> .	10 <i>b</i> .	10 <i>c</i> .	10 <i>d</i> .	10 <i>e</i> .	10 <i>f</i> .
	<i>s.</i>	<i>s.</i>	<i>s.</i>	<i>s.</i>	<i>s.</i>	<i>s.</i>
Winders ....	7	8 6	8 3	—	—	—
Reelers ....	—	—	—	—	—	—
Warpers, M. ....	—	—	—	—	—	—
"    W. ....	—	—	—	—	—	—
Drawers-in .....	—	—	—	—	—	—
"    helpers .....	—	—	—	—	—	—
Twisters-in .....	—	—	—	—	—	—
Beamers ....	—	—	—	—	—	—
<i>Power loom weaving.</i>						
Overlookers .....	22	21	—	—	—	—
Weavers, 2 looms ..	—	—	—	—	—	—
"    3    "    ....	—	—	—	—	—	—
"    4    "    ....	—	—	—	—	—	—
"    6    "    ....	—	—	—	—	—	—
"    average ...	11 2½	8 2	9 6½	10/4	8	9 2½
"    per loom .....	—	—	—	—	—	—
"    helpers .....	—	—	—	—	—	—
Dressers .....	—	—	—	—	—	—
Sizers .....	—	—	—	—	—	—

TABLE 8—Contd. *Average earnings in weaving, &c., Manchester and district.*

Year .....	1850.	1853.	1853.	1853.	1854.	1859.
Authority .....	30 a.	30 a.	16.	16.	30 a.	3 and 34.
	s.	s.	s.	s.	s.	s.
Winders .....	—	—	—	9, 12	—	$\left\{ \begin{array}{l} 5/6 \text{ Gr.} \\ 9 \text{ W.} \end{array} \right.$
Reelers .....	—	—	—	—	—	9, 9/6
Warpers, M. ....	—	—	24, 25	—	—	23
"    W. ....	—	—	—	11, 12	—	—
Drawers-in .....	—	—	18, 26	18, 25	—	19
"    helpers ..	—	—	4/6	—	—	—
Twisters-in .....	—	—	—	—	—	—
Beamers .....	—	—	—	—	—	22
<i>Power loom weaving</i>						
Overlookers .....	—	—	—	—	—	—
Weavers, 2 looms ...	—	—	—	—	—	10, 10/9
"    3 " " ..	—	—	—	—	—	15, 16
"    4 " " ..	—	—	17/6	—	—	16 to 20
"    6 " " ..	—	—	—	—	—	—
"    average ...	10	11	—	10, 16	10	—
"    per loom ..	—	—	—	—	—	—
"    helpers ...	—	—	4/6	—	—	5
Dressers .....	—	—	—	25, 30	—	20
Sizers .....	—	—	—	—	—	25

Year .....	1860.	1860.	1860.	1860.	1870.	1870.
Authority .....	10 a.	10 b.	10 a.	30 a.	10 a.	10 b.
	s.	s.	s.	s.	s.	s.
Winders .....	8	9	10/9	—	11	11/6
Reelers .....	—	—	—	—	—	—
Warpers, M. ....	—	—	—	—	—	—
"    W. ....	—	—	—	—	—	—
Drawers-in .....	—	—	—	—	—	—
"    helpers ..	—	—	—	—	—	—
Twisters-in .....	—	—	—	—	—	—
Beamers .....	—	—	—	—	—	—
<i>Power loom weaving.</i>						
Overlookers .....	25	25	—	—	30	30
Weavers, 2 looms ...	—	—	—	—	—	—
"    3 " " ..	—	—	—	—	—	—
"    4 " " ..	—	—	—	—	—	—
"    6 " " ..	—	—	—	—	—	—
"    average ...	14/6	14/9	15/1	12	17	15/6
"    per loom ..	—	—	—	—	—	—
"    helpers ...	—	—	—	—	—	—
Dressers .....	—	—	—	—	—	—
Sizers .....	—	—	—	—	—	—

TABLE 8.—*Contd. Average earnings in weaving, &c., Manchester and district*

Year .....	1870.	1871.	1871.	1871.	1872.	1873.
Authority .....	10 s.	9 s.	35 s.	9 s.	6 d.	33.
	s.	s.	s.	s.	s.	s.
Winders .....	11	11	12, 15	—	13 6	—
Reelers .....	—	—	10, 15	—	13	12/6
Warpers, M. ....	—	—	30	—	—	26
"    W. ....	—	—	—	—	—	—
Drawers-in .....	—	—	24	—	—	—
"    helpers .....	—	—	5	—	—	—
Twisters-in .....	—	—	—	23 6	—	—
Beamers .....	—	—	22, 27/6	27/8	—	—
<i>Power loom weaving.</i>						
Overlookers .....	—	—	—	—	—	—
Weavers, 2 looms ....	—	—	11, 14	10/6	—	—
"    3    "    ....	—	—	—	—	17	—
"    4    "    ....	—	—	18, 22	—	20	—
"    6    "    ....	—	—	—	—	—	—
"    average ....	13 10	—	—	—	—	—
"    per loom .....	—	—	—	—	—	—
"    helpers ....	—	—	5	—	—	—
Dressers .....	—	—	26, 36	—	—	—
Sizers .....	—	—	—	32	—	30
<hr/>						
Year .....	1874.	1876.	1876.	1877.	1877.	1877.
Authority .....	41 s.	32 s.	35 s.	1 s.	10 s.	10 s.
	s.	s.	s.	s.	s.	s.
Winders .....	—	—	10 6, 12	16	14	17
Reelers .....	—	12, 15	12	—	—	—
Warpers, M. ....	—	30, 35	45	—	—	—
"    W. ....	—	—	—	—	—	—
Drawers-in .....	—	24	—	—	—	—
"    helpers .....	—	—	—	—	—	—
Twisters-in .....	—	—	—	—	—	—
Beamers .....	—	15, 20	—	—	—	—
<i>Power loom weaving.</i>						
Overlookers .....	—	—	—	34, 36	34	—
Weavers, 2 looms ....	—	—	—	—	—	—
"    3    "    ....	—	—	—	—	—	—
"    4    "    ....	—	—	—	—	—	—
"    6    "    ....	—	—	—	—	—	—
"    average ....	15	—	—	18	16	18 6
"    per loom .....	6	4 to 6	—	—	—	—
"    helpers ....	4/6, 5	—	—	—	—	—
Dressers .....	—	40, 50	—	—	—	—
Sizers .....	—	—	—	—	—	—

TABLE 8—*Contd.* Average earnings in weaving, &c., Manchester and district.

Year .....	1877.	1877.	1878.	1882.	1882 and '87	1883.
Authority .....	3.	37.	49.	12.	12.	3.
	s.	s.	s.	s.	s.	s.
Winders .....	13/4, 15	—	} 15 {	10, 20	10, 29	13, 14
Reelers .....	12	—		—	—	—
Warpers, M. ....	—	—	—	—	—	—
„ W. ....	19 6, 22	—	22 6	16, 22 6	18, 21	—
Drawers-in .....	23, 28 7	—	—	25, 35	—	—
„ helpers .....	2 6, 3 *	—	—	—	—	—
Twisters-in .....	23	—	—	25, 35	—	—
Beamers .....	—	15, 20	—	—	—	—
<i>Power loom weaving.</i>						
Overlookers .....	—	—	42	29, 70	—	—
Weavers, 2 looms ...	12, 12 7	—	—	—	—	—
„ 3 „ ....	18, 19	—	—	16, 18 6	16, 19	—
„ 4 „ ....	20, 21 5	—	—	20, 25 6	20, 25 6	—
„ 6 „ ....	—	—	—	29, 32	29, 32	—
„ average ...	—	15, 20	15	—	—	—
„ per loom .....	—	—	—	—	—	—
„ helpers ....	2 6 *	—	—	2 6, 5	—	—
Dressers .....	41 6	—	—	—	—	—
Sizers .....	35, 55	—	—	3 1, 45	30/9, 45	—
<hr/>						
Year .....	1883.	1883.	1883.	1883.	1883.	1883.
Authority .....	10 a.	10 b.	10 c.	10 g.	10 h.	10 i.
	s.	s.	s.	s.	s.	s.
Winders .....	17 6	12 6	12	—	—	—
Reelers .....	—	—	—	—	—	—
Warpers, M. ....	—	—	—	—	—	—
„ W. ....	—	—	—	—	—	—
Drawers-in .....	—	—	—	—	—	—
„ helpers .....	—	—	—	—	—	—
Twisters-in .....	—	—	—	—	—	—
Beamers .....	—	—	—	—	—	—
<i>Power loom weaving.</i>						
Overlookers .....	36, 38	33	—	—	—	—
Weavers, 2 looms ...	—	—	—	—	—	—
„ 3 „ ....	—	—	—	—	—	—
„ 4 „ ....	—	—	—	17 9	18	—
„ 6 „ ....	—	—	—	—	—	—
„ average ....	19/8½	15	16	—	—	15/0½
„ per loom .....	—	—	—	—	—	—
„ helpers ....	—	—	—	5/3	6	—
Dressers .....	—	—	—	—	—	—
Sizers .....	—	—	—	—	—	—

\* Half time.

TABLE 8—*Contd. Average earnings in weaving, &c., Manchester and district.*

Year .....	1884.	1884.	1884.	1884.	1884.	1884.
Authority .....	21.	52.	14 A.	14 B.	14 C.	14 D.
	s.	s.	s.	s.	s.	s.
Winders .....	10, 20	8, 12	—	—	11/3	—
Reelers .....	—	—	—	18	—	—
Warpers, M. ....	—	26	—	—	—	—
"    W. ....	18, 20	—	—	—	—	—
Drawers-in .....	—	26	—	—	—	—
"    helpers ..	—	—	—	—	—	—
Twisters-in .....	—	—	—	—	—	—
Beamers .....	—	30/6	—	—	—	—
<i>Power loom weaving.</i>						
Overlookers .....	—	—	28	—	—	—
Weavers, 2 looms ..	—	—	—	—	—	—
"    3    "    "	—	—	—	—	—	—
"    4    "    "	15, 18	—	—	—	—	—
"    6    "    "	—	—	—	—	—	—
"    average ...	—	15 3	16	20	22/6	18
"    per loom ...	5, 6	—	—	—	—	—
"    helpers ...	—	—	—	—	—	—
Dressers .....	—	36/6	—	—	—	—
Sizers .....	—	38	—	—	—	—
Year .....	1884.	1884.	1884.	1886.	1886.	1886.
Authority .....	14 E.	14 F.	14 J.	1.	1†	80.
	s.	s.	s.	s.	s.	s.
Winders .....	—	—	—	11/8	12 8 }	18
Reelers .....	—	14	—	11 11		
Warpers, M. ....	—	—	35/6	33 7	38	—
"    W. ....	—	—	—	1. 4	18 2	—
Drawers-in .....	—	—	—	21 6	24/10	—
"    helpers ..	—	—	—	5 9	—	—
Twisters-in .....	—	—	—	19/5	20/3	—
Beamers .....	—	—	—	24/10	—	—
<i>Power loom weaving.</i>						
Overlookers .....	—	—	—	33 6	36/1	41, 45
Weavers, 2 looms ..	—	—	—	11/9	11/1	—
"    3    "    "	—	—	—	14 9	16/1	—
"    4    "    "	—	—	—	17 9	20/2	—
"    6    "    "	—	—	—	—	26/6	—
"    average ....	15	—	—	13 3	17/4	20, 21
"    per loom ...	—	—	—	5 3, 7	5/2	—
"    helpers ..	—	—	—	—	—	—
Dressers .....	—	—	—	—	—	—
Sizers .....	—	—	—	30 3	35 2	—

\* Manchester.

† Lancs and Cheshire (S. Lancs only in 1833).



TABLE 8—*Contd.* Average earnings in weaving, &c., Manchester and district.

Year .....	1890.	1891-92.	1891-92.	1893.	1903.	1903.	1906.
Authority .....	10 <sup>h</sup> .	7.	8.	19.	19.	2.*	2.†
	s.	s.	s.	s.	s.	s.	s.
Winders .....	14	15/3	—	16	—	12/7	14 10/7
Reelers .....	—	—	—	—	—	13/1	13 6/6
Warpers, M. ....	—	—	—	—	—	—	40 6
„ W. ....	—	18/9	—	—	—	17 3	21/1
Drawers-in .....	—	—	—	—	32, 40	25	30/9
„ helpers .....	—	—	—	—	—	—	—
Twisters-in .....	—	—	—	—	26. 33	25/9	25/7
Beamers .....	—	—	—	—	30, 35	—	—
<i>Power loom weaving.</i>							
Overlookers .....	35	—	—	—	—	39/3	42/8
Weavers, 2 looms ...	—	—	—	11/4	—	11/1	13
„ 3 „ ....	—	—	—	17	—	15/4	17/10
„ 4 „ ....	—	—	25/3	23	—	20	24
„ 6 „ ....	—	—	—	30/6	—	—	32/9
„ average ...	16/6	—	20	—	20	15/2	20/8
„ per loom ...	—	5/6	5 3	—	5 10	5/3	6
„ helpers ....	—	—	—	—	—	—	—
Dressers ... ..	—	—	—	—	—	37/2	37/1
Sizers .....	—	—	—	—	—	—	43/9

\* Manchester.

† Lancs and Cheshire (S. Lancs only in 1833).

As with the other tables in this section, the statements in this table are so varied and sometimes so self-conflicting that it is desirable that a rough summary be made as a suggestion of the probable course of wages in the various occupations, leaving the details to be filled in and the necessary corrections to be made when the other localities have been studied in detail. Such a summary is given in the following table. The chief gap is seen to be from 1859-61 to 1870-71. The lowest point was about 1839-41, and from that date to 1906, weavers, who form the largest group, have advanced by nearly 100 per cent., winders by about 70 per cent., reelers by about 55 per cent., and overlookers by about 55 per cent. The comparatively slow rate of change in the first half of the century agree with the summaries for other departments, and with Ellison's estimates of the average earnings of operatives employed in weaving mills, the details of which will be discussed later.

TABLE 9.—*Approximate estimates of average wages in weaving, &c., Lancashire and Cheshire, 1826-1906.*

	1826.	1833.	1840-41.	1845.	1849-50.	1853.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Winders (women)	9 6	9 6	9 -	11 -	8 6	10 6
Reelers „	10 12	10 -	9 -	9 -	9 -	—
Warpers „	11 -	11 -	9 -	12 -	—	11 6
Weavers .....	11 -	11 -	10 6	11 6	11 -	11 6
Helpers .....	—	—	5 -	5 -	5 -	5 -
Overlookers .....	27 -	26 3	—	27 -	—	27 6
Sizers and Dressers	28 -	27 10	—	—	—	27 6

	1859-61.	1870-71.	1877.	1886.	1891.	1906
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Winders (women)	10 -	13 -	14 -	13 -	14 6	15 3
Reelers „	9 6	13 -	13 -		—	13 10
Warpers „	—	—	17 -	18 -	19 -	21 -
Weavers .....	12 6	14 -	17 -	17 -	19 -	20 6
Helpers .....	5 -	5 -	5 -	—	5 9	6
Overlookers .....	—	—	35 -	36 -	—	42 6
Sizers and Dressers	—	30 -	40 -	35 -	—	40 -

*Percentage changes in wages. Manchester district.*

At the census of 1833 the average wage of all employed in the Manchester district was 10s. 3d. At the wage census of 1886 it was 14s. 5½d., and in 1906 16s. 3d. The returns of numbers employed and wages paid given monthly in the *Labour Gazette* show the average wage as follows:—

	s. d.		s. d.		s. d.
1905 .....	15 7	1907 .....	15 9	1909 .....	15 6½
'06 .....	15 9	'08 .....	14 6	(January to August)	

These averages include those working short time and overtime, as well as those working the normal week. In 1906 the average of all workpeople, including those who worked more or less than full time, was 16s. at the date of the census, and 15s. 6½d. taking the mean of twelve weeks, one in each month. As we have seen, however, we cannot be sure that our statements are in the main for Manchester only; many are intended to cover the Lancashire and Cheshire district, particularly the southern portion forming the federated area, and in the following estimates are the numbers which, on the basis of the above figures, apply more particularly to Manchester in the restricted sense, as well as to corresponding numbers indicated for Lancashire and Cheshire. Previous to 1833 the Manchester figures are practically all we have for the industry, but the overwhelming proportion of the trade carried on in Manchester from 1806 to 1833 gives ground for the probability that they approximately represent the course of wages outside Scotland. From 1833 to 1906 these numbers will require further modification when we come to consider the course of wages at Oldham, Bolton, Preston, and elsewhere, and combine them into one final estimate for the whole country.

TABLE 10.—*Estimated changes in average earnings of cotton operatives employed in factories in the Manchester district, 1806-1906. (1886 = 100.)*

Year.	Manchester.	Lancashire and Cheshire.*	Year.	Manchester.	Lancashire and Cheshire.*
1806.....	75 $\frac{2}{3}$	73	1855.....	70 $\frac{1}{3}$	68
'10-16....	79 $\frac{1}{3}$	76	'59-61....	71 $\frac{2}{3}$	70
'17.....	78 $\frac{1}{3}$	75	'66.....	81 $\frac{2}{3}$	80
'18-20....	77 $\frac{2}{3}$	75	'70.....	88 $\frac{1}{3}$	87
'21-22....	77	74	'71.....	92 $\frac{1}{3}$	91
'23-25....	73	70	'74.....	100	99
'26.....	73 $\frac{1}{3}$	70	'77.....	105 $\frac{1}{3}$	104
'32-33....	71	68	'80.....	97	96
'36.....	72 $\frac{1}{3}$	69	'83.....	104 $\frac{1}{3}$	103
'37-41....	65 $\frac{2}{3}$	63	'86.....	100	100
'45.....	74 $\frac{2}{3}$	72	1906.....	112 $\frac{1}{3}$	128 $\frac{2}{3}$
'49-51....	65 $\frac{2}{3}$	63			

\* Mainly South Lancashire and Cheshire to 1886.

### *Oldham and District.*

For the purpose of tracing the history of wages in the cotton industry, perhaps even Manchester does not exceed Oldham in importance. It is true that Manchester was the early centre of the trade, and that Oldham is merely one of the extensions, but in the spinning branch of the trade Oldham is the home of collective bargaining and the standard rate, and Oldham methods of wage arrangements have gradually extended over an ever-widening area. The Oldham spinning list, adopted in 1875, has gradually found its way into other parts until, with the possible exception of Bolton, mills spinning on it are to be found in every Lancashire and Cheshire cotton centre. The Oldham cardroom list, compiled twenty years ago, has only been superseded by one more elaborate, based on it and applicable to the whole federated area. This for cardroom purposes is practically all Lancashire and Cheshire. Further, the general advances and reductions at Oldham have for more than thirty years been followed at all the other American-using cotton centres, so that while Ashton, Preston, Blackburn, Burnley, and other places still in part spin on local lists, the terms of the Brooklands Agreement and the advances and reductions made under it are observed by them.

In view of these considerations, it is unfortunate that we have not for Oldham itself a series of statements made by the local Chamber of Commerce in each year when inquiries were instituted by the Board of Trade, and the returns were published in the "Tables of the Revenue." There is much reason to believe that some of the material given under the section relating to Manchester and district really emanates from Oldham, but we cannot now identify it. Oldham being the centre of fustian and velveteen weaving, it is almost certain that the details given by Chadwick for velveteen weavers relate to this district, and have been tabulated on this assumption. We have been able, fortunately, to remedy the defects in our material by obtaining some returns for certain

TABLE 11.—OLDHAM AND DISTRICT. *Average earnings of cotton operatives for an ordinary week's work, 1833-1906.*

	Year .....	Authority	1833.		1833.	1836-7.	1839.	1841.	1841.	1841.	1849.
			4 and 40.		26a.	26a.	*	26a.	26d.	26c.	*
			No.	Av.							
			s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Blowroom women.....	W.	—	—	—	—	—	—	—	—	—	—
Mixers .....	M.	—	—	—	—	—	—	—	—	—	—
Scutchers .....	M.	—	—	—	—	—	—	—	—	—	—
Carding overlookers.....	M.	—	—	—	—	—	—	—	—	—	—
Strippers and grinders...	M.	—	—	15 8	14 6	—	14 6	—	—	—	13 <sup>1</sup> -, 14 <sup>1</sup> -
Lap tenters .....	M.	—	—	—	—	—	—	—	—	—	—
Draw-frame tenters .....	W.	—	7 11	8 -	9 -	—	9 -	—	—	—	8 -
Shut-frame tenters .....	W.	—	6 4	4/6, 8/-	6 <sup>1</sup> -, 8/6	—	6 <sup>1</sup> -, 8/6	—	—	—	—
Inter-frame tenters .....	W.	—	—	—	—	—	—	—	—	—	—
Rover tenters .....	W.	—	7 7	—	—	—	—	—	—	—	8 <sup>1</sup> -, 9 <sup>1</sup> -
Tenters' average .....	W.	—	—	—	—	—	—	—	—	7 to 12 <sup>6</sup>	—
Little or back tenters ...	G.	—	—	3 <sup>1</sup> -, 4/6	4/6, 5/6	—	4/6, 5/6	—	—	—	—
Spinning overlookers ...	M.	—	23 1	—	—	—	—	—	—	—	—
Spinners .....	M.	—	26 1	29 10	26 10	—	24 7 <sup>1</sup>	25 <sup>1</sup> -, 26/-	21 -	—	—
Big piecers .....	L. & M.	—	—	8 <sup>1</sup> 4, 5/-	10/3,	—	8 9,	—	9 <sup>1</sup> -, 7/-	—	—
Little piecers .....	L.	—	—	3/-	6/3, 4 <sup>1</sup> -	—	5/6	—	—	—	—
Half-time piecers .....	L.	—	2 7	—	—	—	2 9	—	—	—	—
Piecers' average .....	L. & M.	—	6 2	—	—	—	—	—	—	—	—
Twiners .....	M.	—	—	—	—	—	—	—	—	—	—
Ring and throstle } overlookers .....	M.	—	22 7	—	—	—	—	—	—	—	—
Ring or throstle spin- } ners .....	W. & G.	—	6 7	—	—	—	—	—	—	—	—
Winders .....	W. & G.	—	—	—	—	—	—	—	—	—	—
Reelers .....	W. & G.	—	—	—	—	—	—	—	—	—	—
Doublers .....	W. & G.	—	—	—	—	—	—	—	—	—	—
Warpers .....	W.	—	12 7	—	—	—	—	—	—	—	—
Weaving overlookers ...	M.	—	24 8	—	—	—	—	—	—	—	—
Weavers, 2 looms .....	L. W. & G.	—	—	—	—	—	—	—	—	—	—
" 3 " .....	L. W. & G.	—	—	—	—	—	—	—	—	—	—
" 4 " .....	W. & M.	—	—	—	—	—	—	—	—	—	—
" average .....	—	—	10 9	15 -	18 -	—	12 4 <sup>1</sup>	10 6	—	—	—
Fustian weavers, 2 looms	L. W. & G.	—	—	—	—	—	—	—	—	—	—
" 3 " .....	L. W. & G.	—	—	—	—	—	—	—	—	—	—
" 4 " .....	W. & M.	—	—	—	—	—	—	—	—	—	—
" average .....	—	—	—	13 8	13 6	12 0	13 6	—	—	—	12 0
Weavers' assistants .....	L. & G.	—	—	3/6, 4/3	4 <sup>1</sup> -, 4 9	—	4 <sup>1</sup> -, 4 8	—	—	—	—
Dressers .....	M.	—	29 5	—	—	—	—	—	—	—	—
Sizers .....	M.	—	—	—	—	—	—	—	—	—	—
Warehousemen and } packers .....	M.	—	—	—	—	—	—	—	—	—	—
Totals and averages } of all employed ... }	—	—	3,775	— 7	—	—	—	—	—	—	—

\* The figures for fustian weavers are from Chalwick, and those for tenters and grinders in 1849 are from a speech by Mr. T. Emmott of Oldham in 1889.

TABLE 11—*Contd.* OLDHAM AND DISTRICT. *Average earnings of cotton operatives, 1833-1906.*

	Year .....	1859.	1860.	1866.	1870.	1870.	1871.	1880.	1882.	1882.
	Authority	*	17a.	8.	17a.	17b.	9.	17a.	25.	25.
		s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
blowroom women.....	W.	—	—	—	—	—	—	—	—	—
fixers .....	M.	—	—	—	—	—	—	—	—	—
cutchers.....	M.	—	—	—	—	—	16/-, 22/-	—	—	—
carding overlookers.....	M.	—	—	—	—	—	26/-, 50/-	—	40/-, 50/-	—
trippers and grinders...	M.	—	16 3	—	19 4	20 -	18/-, 22/-	22 3	22/-, 24/-	—
lap tenters.....	M.	—	—	—	—	—	—	—	—	—
draw-frame tenters .....	W.	—	11 7	—	14 3	14 9	—	16 -	16/3, 19/-	—
lub-frame tenters .....	W.	—	10 3	—	12 3	10 -	—	15 4	16/8, 19/-	—
inter-frame tenters .....	W.	—	—	—	—	—	—	—	—	—
loft tenters.....	W.	—	11 10	—	14 2	13 3	—	15 -	15/6, 19/-	—
tenters' average .....	W.	—	—	13 -	—	14 4	—	—	—	—
little or back tenters ...	G.	—	—	—	—	13 4	—	9 -	—	—
pinning overlookers ...	M.	—	—	—	—	6 6	—	—	40/-, 50/-	—
pinners .....	M.	—	27 10	—	31 3	—	25/-, 35/-	32 11	—	30/-, 36/-
big piecers .....	L. & M.	—	—	—	—	31 6	13/-, 15/-	—	—	—
little piecers .....	L.	—	—	—	—	14 6	9/-, 11/-	—	—	—
half-time piecers .....	L.	—	—	—	—	10 6	—	—	—	—
piecers' average .....	L. & M.	—	11 -	—	12 -	—	—	12 5	—	9/6, 16/6
winners.....	M.	—	—	—	—	—	—	—	—	—
ring and throstle	} M.	—	—	—	—	—	—	—	—	—
overlookers .....		—	—	—	—	—	—	—	—	—
ring or throstle spin-	} W. & G.	—	—	—	—	—	—	—	—	—
ners .....		—	—	—	—	—	—	—	—	—
finders .....	W. & G.	—	11 6	—	14 -	—	—	14 2	—	—
feelers .....	W. & G.	—	—	—	—	—	—	—	—	—
doubblers .....	W. & G.	—	—	—	—	—	—	—	—	—
warpers .....	W.	—	—	—	—	—	—	—	—	—
weaving overlookers ...	M.	—	—	—	—	—	26/-, 34/-	—	—	—
weavers, 2 looms .....	L. W. & G.	—	—	—	—	—	14/-, 15/-	—	—	—
"    3    "    .....	L. W. & G.	—	—	—	—	—	—	—	—	—
"    4    "    .....	W. & M.	—	—	—	—	—	18/-, 25/-	—	—	—
"    average .....	—	—	—	—	—	—	—	—	—	—
fustian weavers, 2 looms	L. W. & G.	—	—	—	—	—	—	—	—	—
"    3    "    .....	L. W. & G.	—	—	—	—	—	—	—	—	—
"    4    "    .....	W. & M.	—	—	—	—	—	—	—	—	—
"    average .....	—	14 0	11 9	—	14 10	—	—	15 8	—	—
weavers' assistants .....	L. & G.	—	—	—	—	—	—	—	—	—
pressers .....	M.	—	—	—	—	—	—	—	—	—
sizers.....	M.	—	—	—	—	—	25/-, 32/-	—	—	—
warehousemen and	} M.	—	—	—	—	—	—	—	—	—
packers .....		—	—	—	—	—	—	—	—	—
Totals and averages }	—	—	—	—	—	—	—	—	—	—
of all employed ... }	—	—	—	—	—	—	—	—	—	—

\* The figures for fustian weavers are from Chadwick.



TABLE 11.—*Contd.* OLDHAM AND DISTRICT. *Average earnings of cotton operatives, 1833-1906.*

	Year .....	1883.	1884.	1884.	1884.	1884.	1884.	1886.		1890.
		3.	18.	21c.	21b.	21c.	21.	1.		17a.
		Authority						No.	Av.	
		<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>
Blowroom women.....	W.	14/-, 15/-	14 -	—	—	—	—	147	14 1	—
Mixers .....	M.	—	20/-, 22/-	21 -	—	—	—	147	19 -	—
Scutchers .....	M.	18/-, 24/-	—	—	21 6	21 -	—	167	20 7	—
Carding overlookers.....	M.	30/-, 60/-	—	40 -	38 -	42 -	—	72	40 10	—
Strippers and grinders...	M.	20/-, 23/-	23 -	22 6	23 -	22 3	—	399	21 10	24 7
Lap tenters .....	M.	—	22 -	—	—	—	—	38	18 9	—
Draw-frame tenters .....	W.	15/-, 20/-	—	17 6	17 9	19 -	—	458	17 4	18 11
Slub-frame tenters .....	W.	14/8,	—	17 -	17 6	18 6	—	1,697	16 5	17 5
Inter-frame tenters .....	W.	18/-	—	16 -	16 -	16 6	—	—	—	—
Rover tenters .....	W.	—	—	—	—	—	—	2,155	16 8	—
Tenters' average .....	W.	—	16 -	—	—	—	—	724	8 4	—
Little or back tenters ...	G.	7/-, 10/-	—	3/9, 4/-*	—	—	—	92	3 5*	—
Spinning overlookers .....	M.	36/-, 50/-	—	41 -	42 -	45 -	—	63	43 1	—
Spinners .....	M.	30/-, 45/-	34 -	34 6	33 -	31 -	35/3, 36/3	1,477	33 2	37 -
Big piecers .....	L. & M.	10/- to	15 -	10 6	—	—	15/-, 16/-	1,468	15 2	—
Little piecers .....	L.	18/-	11 6	—	—	—	9/-, 11/-	1,330	11 0	—
Half-time piecers .....	L.	2/6, 4/6	3 1	4 6	—	—	3/6, 4/3	211	4 -	—
Piecers' average .....	L. & M.	—	—	—	11 3	10 6	—	2,798	13 2†	12 10
Twiners.....	M.	32/-, 38/-	34 6	—	—	—	—	3,009	12 7‡	—
Ring and throstle overlookers .....	M.	28 -	—	—	—	—	—	—	33 7§	—
Ring or throstle spinners .....	W. & G.	14/-, 16/-	—	—	—	—	—	170	13 6	—
Winders .....	W. & G.	16/-, 18/-	14 6	—	16 6	16 -	—	133	13 4	14 6
Reelers .....	W. & G.	—	—	12/6, 20/-	—	—	—	700	13 2	—
Doublers .....	W. & G.	—	—	—	—	—	—	—	—	—
Warpers .....	W.	16/-, 19/-	19 -	18 -	17 4	18 -	—	27	17 5	—
Weaving overlookers ...	M.	—	43 -	—	37 -	38 -	—	63	36 7	—
Weavers, 2 looms .....	L. W. & G.	—	—	—	—	—	—	?	10 -	—
" 3 " .....	L. W. & G.	—	—	—	—	—	—	117	14 10	—
" 4 " .....	W. & M.	—	—	—	—	—	—	172	19 9	—
" average .....	—	5/8 per loom	—	—	5/4 per loom	5/4 per loom	—	289	17 9	—
Fustian weavers, 2 looms	L. W. & G.	—	12 9	—	—	—	—	—	—	—
" 3 " .....	L. W. & G.	—	18 -	—	—	—	—	—	—	—
" 4 " .....	W. & M.	—	23 -	—	—	—	—	—	—	—
" average .....	—	6/- per loom	17/-	6/- per loom	—	—	—	—	16 10‡	16 -
Weavers' assistants .....	L. & G.	4/6, 6/-	—	4/-, 5/-	—	—	—	80	5 6	—
Dressers .....	M.	—	—	—	—	—	—	193	2 7	—
Sizers .....	M.	—	—	—	—	—	—	14	39 5	—
Warehousemen and packers .....	M.	22/-, 28/-	—	26 -	24 -	22 -	—	249	22 0	—
Totals and averages of all employed ...	—	—	—	—	—	—	—	11,567	17 2	—

\* Half time.

† Excluding half timers.

‡ Including half timers.

§ The average is for all places except Halifax.

|| Average fustian, velvetten, &amp;c., weavers, all places. See text.

TABLE 11—Contd. OLDHAM AND DISTRICT. Average earnings of cotton operatives, 1833-1906.

	Year .....	1890.	1891.	1891.	1892.	1900.	1901.	1906.	1906.	
	Authority	48.	8.	17b.	47.	17a.	17a.	17a.	2.	
									No.	Av.
		s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.		s. d.
Blowroom women.....	W.	—	—	17 7	—	—	—	—	—	—
Mixers .....	M.	—	—	20 6	—	—	—	—	212	22 8
Scutchers .....	M.	—	—	23 —	—	—	—	—	263	28 6
Carding overlookers.....	M.	—	—	37 —	—	—	—	—	191	42 3
Strippers and grinders...	M.	25 —	26 4	25 10	26 5	29 5	—	30 5	574	30 11
Lap tenters .....	M.			24 4	—	—	—	—	—	
Draw-frame tenters .....	W.	19 6	—	19 7	—	22 —	21 3	23 —	763	22 9
Slub-frame tenters .....	W.	19 —	—	18 4	—	20 7	21 —	21 9	439	22 3
Inter-frame tenters .....	W.	19 6	—	18 4	—	19 6	20 10	20 8	587	20 9
Rover tenters .....	W.	17 10	—	17 10					19 6	19 6
Tenters' average .....	W.	—	—	18 5	18 0	—	—	—	4,225	20 10*
Little or back tenters .....	G.	9 —	9 4	—	9 —	—	—	—	—	—
Spinning overlookers .....	M.	—	—	—	—	—	—	—	151	46 2
Spinners .....	M.	—	—	37 —	—	39 8	—	42 1	3,165	41 10
Big piecers .....	L. & M.	—	—	16 3	—	—	—	—	3,155	19 4
Little piecers .....	L.	—	—	11 6	—	—	—	—	2,953	14 —
Half-time piecers .....	L.	—	—	—	—	—	—	—	—	—
Piecers' average .....	L. & M.	—	—	—	—	14 8	—	15 6	6,108	16 9
Twiners.....	M.	—	—	—	—	—	—	—	68	41 2
Ring and throstle } overlookers .....	M.	—	—	—	—	—	—	—	—	—
Ring or throstle spin- } ners .....	W. & G.	—	—	—	—	—	13/-, 18/-	—	624	16 4
Winders .....	W. & G.	—	—	—	—	15 —	16/-, 17/6	16 4	1,169	14 3
Reelers .....	W. & G.	—	—	—	—	—	17/6	—	873	14 4
Doublers .....	W. & G.	—	—	—	—	—	16/-, 17/-	—	179	16 2
Warpers .....	W.	—	—	—	—	—	17/6, 18/-	—	120	19 10
Weaving overlookers .....	M.	—	—	—	—	—	—	—	92	38 7
Weavers, 2 looms .....	L. W. & G.	—	—	—	—	—	—	—	250	11 10
" 3 " .....	L. W. & G.	—	—	—	—	—	—	—	628	16 6
" 4 " .....	W. & M.	—	—	—	—	—	—	—	394	21 3
" average .....	—	—	—	—	—	—	—	—	1,272	17 1
Fustian weavers, 2 looms .....	L. W. & G.	—	—	—	—	—	—	—	209	12 7
" 3 " .....	L. W. & G.	—	—	—	—	—	—	—	692	18 6
" 4 " .....	W. & M.	—	—	—	—	—	—	—	107	22 11
" average .....	—	—	—	—	—	16 3	—	16 11	1,008	17 5
Weavers' assistants .....	L. & G.	—	—	—	—	—	—	—	—	—
Dressers .....	M.	—	—	—	—	—	—	—	—	—
Sizers .....	M.	—	—	—	—	—	—	—	—	—
Warehousemen and } packers .....	M.	—	—	—	—	—	—	—	810	28 3
Totals and averages } of all employed ...	—	—	—	—	—	—	—	—	26,805	21 —

\* Including 491 tenters unclassified at an average of 21s. 1d.

years from a couple of large firms, and while these may not be quite typical as regards the averages in any particular year, the rates of change will probably be near the truth. It should be noticed, however, that no group of mills, however many may be employed, can correctly represent the changes in average earnings over a long period, if they have been in existence all the time. The tendency being to put in larger machinery, involving a question of space, old mills have often to renew their machinery without adding to the spindleage, because there is not space for extensions. Some firms have actually had to put in ring frames and spin ring yarn because their mills would not, when the old mules were taken out, contain the mules of the size with which it has been desired to replace them. The total effect of all the changes in, and additions to, the machinery of a district can only be estimated when a general census is taken. This, of course, applies to all trades more or less, but its application to the textile trades is very particularly direct.

Table 11 gives the details relating to average earnings in a normal week at various dates.

*Card and blowing-room operatives.*

In 1890 the Oldham employers and the card- and blowing-room operatives agreed on a list of standard wages for standard machines. The list rates are not earnings, but, like the gross wages of the Oldham spinning list referred to below, are the basis for calculating the piece prices to be paid on machines of all sizes, in accordance with the standard rate for the standard machine. These conditions remained in operation for several years, being superseded by more elaborate lists for a wider area. At the commencement they were practically a co-ordination and standardisation of conditions then in vogue. In 1903 a Universal list for cards superseded the portion of the Oldham list dealing with strippers and grinders, and extended over the "federation area," a not quite clearly defineable area, but covering Manchester, Oldham, Ashton, Rochdale, and practically all the South Lancashire district, not necessarily including Bolton, though many Bolton employers have adopted it. It has also extended in a few cases to towns in north and north-east Lancashire. The basis of the list is a payment of 2s. per card for a standard weight carded, the number of men employed being regulated as far as possible to yield 14 cards per man. As the conditions vary as to the amount of cotton carded and the number of cards in a mill, and provisions are also made for extra payment where no under-carder is employed, where cards are ground more often than three-fourths of the total number of cards per week, and other features, the standard wage is, of course, only a measuring point. Under the Oldham card-room list, the basis was a standard rate of 24s. per week, with modifications for various conditions. These men are classed as time workers or "datal hands," but as their rates of pay depend on the usual amount of work to be done, and they have to get that amount of work done, they are, in reality, piece-workers. No operatives in the trade have had their wages advanced to as great an extent as the "card-room jobbers," as they are now called, and this advance has been a part of a deliberate policy to create an

additional skilled employment, replacing one hitherto quite or nearly unskilled, and greatly reducing the number of men employed. The machinery is totally different from what it was fifty or less years ago, and the number of men employed is reduced by more than one-half. In the case of the frame tenters, the rates were the base rates for standard lengths of machines, namely, slubbers, 84 spindles; intermediates, 124 spindles; and rovers, 164 spindles. 1 per cent. was to be added or deducted, as the case may be, for every 4 slubber, 6 intermediate, and 8 rover spindles over or below the standard size. These rates are given in the table below, with the corresponding rates after general advances or reductions had been agreed to. In 1907 a new list for frames, again a "Universal list," was agreed to. This list states the standard conditions for 55½ hours, and to it was to be added a 5 per cent. advance conceded on the third pay day in May, 1906. In 1907 a further advance of 5 per cent. was conceded, but this was taken off early in 1909. In this list medium counts on frames of the same size as were taken for the Oldham list standard in 1891 are the starting point, with additional payments of 5 per cent. and 10 per cent. respectively on coarse and very coarse counts, and a reduction of 5 per cent. on fine counts. The Universal list varies little from its predecessor in the Oldham district, and might almost be called an elaboration of it. It is significant of the possible variations in earnings under this list that the employers' edition of it, with the corresponding rates calculated from the standard for various sizes of machines, shows rates varying from 17s. 5d. to 31s. 10d. for drawing frame tenters; from 17s. 8d. to 29s. 3d. for big, and 8s. 10d. to 13s. 7d. for little or back slubber tenters; from 15s. 7d. to 30s. 8d. for big, and from 8s. 6d. to 14s. 5d. for little intermediate tenters; and from 12s. 5d. to 34s. 7d. for big, and 8s. 1d. to 17s. 3d. for little roving frame tenters (doffers). This list came into operation on May 1, 1907, at the option of either employer or employed in any mill at which it was desired.

As with spinning so with frame tenting, there are tendencies to increase apart from the general advances conceded from time to time. As the smaller frames are taken out and larger ones are put in, so the average earnings will increase apart from any general changes. Here, as elsewhere, the tendency toward larger and more efficient machinery is continuous, probably, as with spinning, operating with greater pressure during a period of active building and extension than during more quiet times.

The standard rates under the Oldham and Universal lists are given in the following table. From 1889 to 1901 all the rates are the Oldham list rates. In 1902 hours were reduced by one per week and "dotal hands" were reduced *pro rata*, the grinders' standard being 28s. 6d. after the change. Piece workers in the majority of cases made up the difference at once by increased effort, so that the figures for 1900-01 practically represent 1902-05 also. For 1905-07 the rates are "Universal" list rates, except for opener feeders and engine head tenters, who are not included in the "Universal" lists.



TABLE 12.—“Standard rates” under the Oldham and Universal Lists for card- and blowing-room operatives.

	1889-90.		1891-92 Standard.		1895-96.		1899.		1900-01.		1905.		1906.		1907-08.		1909.	
	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
Opener feeders { M. W.	16	9	18	5	17	11	18	5	20	3	20	—	20	11	21	10	20	11
Weighters and feeders { M. and W.	13	—	14	4	13	10	14	4	14	11	14	9	15	6	16	1	15	6
Lap tenters ...	16	—	17	7	17	1	17	7	—	—	—	—	—	—	—	—	—	—
Strippers and grinders ...	23	4	25	8	24	11	25	8	28	3	28	—	29	5	30	10	29	5
Engine head tenters ...	24	—	26	5	25	8	26	5	29	1	28	—	12	2	12	9	12	2
Frame tenters—	10/9, 11/3		11/3, 11/9	10/11, 11/5	10/11, 11/5		11/3, 11/9		—		—		20/9, 22/4,		21/9, 23/5,		20/9, 22/4,	
Drawing .....	19	3	20	3	19	8	20	3	21	3	19/9, 21/3,		23/11		25/-		23/1	
Single slubbers ...	18	6	19	5	18	10	19	5	20	5	20	—	21	—	22	—	21	—
Pair of „ .....	19	3	20	3	19	8	20	3	21	3	21	6	22	—	23	8	22	7
Slubber and intermediate	19	3	20	3	19	8	20	3	21	3	21	3	22	4	23	5	22	4
Pair of intermediates ...	19	—	20	—	19	5	20	—	21	—	21	—	22	1	23	1	22	1
Single „ .....	16	6	17	4	16	10	17	4	18	2½	18	—	18	11	19	10	18	11
Intermediate and rover ...	18	6	19	5	18	10	19	5	20	5	20	—	21	—	22	—	21	—
Pair of rovers .....	17	6	18	4½	17	10	18	4½	19	3½	19	—	19	11	20	11	19	11
Old rovers .....	13	3	13	11	13	7	13	11	14	7	14	6	15	3	15	11	15	3
Back tenters, inter- mediates, slubbers ...	9	—	9	5	9	2	9	5	9	11	9/10, 10/-		10/4, 10/6		10/10, 11/-		10/4, 10/6	
Rovers .....	8	6	8	11	8	8	9	2	9	5	9	6	10	—	10	5	10	—



Frame tenters are not all women, but frame tenting is a woman's work, and nearly all tenters are of 18 years of age and up. The Census of Wages Report, 1906, does not mention girl frame tenters at all, though there would probably be 200-300 all together in the Oldham district, mainly on single slubbers and rovers. If they had been stated separately the average for all frame tenters in Table 11 would have been slightly reduced, but perhaps not by more than 2*d.* or 3*d.*

It is interesting to notice the way in which the stripper and grinder has progressed. A reference to the table of percentage levels under the various lists given in Table 1<sup>3</sup> shows: the general changes for Oldham district card and blowing room males from 1871. In 1886, as the wage census shows, the average wage was only 21*s.* 10*d.*, or little better than a labourer's wage. By that date, however, some firms had been giving their grinders extra work and the average is kept down by the stripper, the two occupations not having been entirely amalgamated. The main change came with the abandonment of the old roller and clearer cards and the introduction of the revolving flat cards in the latter "eighties," but it had been going on before. In 1871 about 20*s.* per week was the average, the grinder being about 1*s.* better paid than the stripper. The advance in 1873 of 1*s.* 6*d.* usually conceded made the wages 21*s.* to 23*s.*, and no change is recorded after until the reduction of 1877<sup>4</sup>. If no other changes had taken place, the wages in 1906 would have been 18·8 per cent. above those of 1876, that is, about 26*s.* 2*d.* The average earnings, however, are 30*s.* 11*d.*, or over 40 per cent. above the probable average of 22*s.* then. Speaking in 1889, Mr. T. Emmott, M.P., stated that "forty years ago Oldham jobbers had 13*s.* or 14*s.*, now they are grumbling at 24*s.*"

In addition to the material given for spinners in Table 11, I have been fortunate in obtaining a memorandum book, mainly relating to the period 1870-72, containing the details of the gross wages of spinners, the amount paid for piecing, the size and speed of the mule, and other more technical details. The particulars relate to between 300 and 400 pairs of mules, of all sizes, in nearly 100 different mills. With the aid of these details we are able to make some intricate calculations. The following is a tabulation :—

<sup>3</sup> See pp. 3 and 4.

<sup>4</sup> A local newspaper stated in January, 1875, that the employers had decided that male dotal hands were to have the same wages for 56½ hours as for 59 when the Factory Act reduced the working week.

TABLE 13.—*Particulars of earnings of spinners and piecers, Oldham, circa 1870-72.*

Number of dozen spindles.	Piecers.					Mindere.		
	Number of observ- ations.	Number of piecers.		Average earnings.		Number of observ- ations.	Average gross earnings.	Average net earnings.
		Full time.	Half time.*	Pair of mules.	Full-time piecer.			
Up to 44.....	24	24	2	s. d. 14 4	13 9	16	s. d. 43 9	s. d. 29 5
45-48.....	8	8	0	12 11	12 11	0	—	—
49-52.....	20	29	2	19 2	12 9	24	46 6	27 4
53-56.....	23	27	5	16 1	12 6½	23	49 -	32 11
57-60.....	27	30	14	18 9	13 8	24	47 8	28 11
61-64.....	11	19	3	22 1	11 10	6	48 4	26 3
65-68.....	24	46	2	23 3	11 10	20	53 6	30 3
69-76.....	88	176	0	24 5	12 2½	81	55 10	31 5
77-84.....	80	161	0	24 6	12 2½	77	57 4	32 10
85-88.....	34	68	0	24 7½	12 4	29	57 2	32 6½
89-92.....	17	35	0	25 6	12 4½	19	57 2	31 8
93-96.....	9	18	0	25 11	13 -	5	60 6	34 7
97-100.....	2	5	0	31 -	12 5	1	67 6	36 6
100 and upwards	4	10	0	30 11	12 4½	3	67 8	41 9
	371	656	28	22 5	12 5	328	53 11	31 6

\* Other than where two half-time little piecers took the place of one full-timer.

When the Oldham list was being compiled in 1875, both employers and spinners made extensive inquiries. The results of one of these inquiries are referred to below. The underlying reason for the introduction of this list was that previously spinners made their own arrangements as to wages of piecers, and that from 1871 to 1875, when no recognised advance in spinners' piece rates took place, constant agitation was going on by the piecers for advances. When, as frequently happened, an advance was obtained, the spinners, who were the losers, applied to their employers for a readjustment of piece rates to compensate them for the increased cost of piecing. We have several instances of the employers paying 1s., 1s. 6d., or 2s. per week to the piecers, independent of their wage from the minders. This plan was adopted to save a revision of piece prices. In 1875 hours were reduced by the Factory Act to 56½ per week, and the piecers took concerted action to maintain their old 59 hours' wages for a 56½ hours' working week. The spinners accordingly "brought in a new list which would have made their wages 15 per cent. to 20 per cent. higher for 56½ hours than they were for 59. The masters refused and then the men demanded an advance of 10 per cent. on the old list."⁵ They were then earning 26s. to 36s., according to the same authority. The outcome of this was that a "gross list" was agreed

⁵ *Capital and Labour*, 11th August, 1875.

upon. This list stated the gross earnings for minders and piecers on mules varying from 36 to 116 dozen spindles, in the following form (taking a then very typical size of mule) :

Number of dozens.	Total earnings.	Percentage (spinners).	Percentage (piecers).
75	£   s.   d. 2   18   -	55·18	44·82

The total earnings are the amount which should be earned by minders and piecers, and the prices for the various counts spun are calculated accordingly. There were, of course, other particulars, some of which will be referred to later, two being the important scale of payment for "over-speed," and the payment of 1s. per week extra for spinning pin cops, that is, weft for weavers shuttles. Had this list been strictly adhered to, piecers' wages would vary from year to year exactly in proportion with those of spinners. The Secretary of the operatives, however, translated the list percentages to minders and piecers into actual money, and a standard wage for piecers varying according to the number of spindles in a pair of mules has been operative ever since. Apart from percentage list changes, therefore, piecers' wages will only have advanced with the increased average size of the mules.

The following table will indicate what that advance has been :—

TABLE 14.

	1870-72 (all sizes).	1871-72 (69—84 dozens).	1874 (69—84 dozens).	1876 (69—84 dozens).	1886 (all sizes).	1906 (all sizes).	Advance percent. 1886- 1906.
Minders, gross .....	53/11	56/6	58/-	58/9	58/9	73/10	25·8
Piecers, per minder	22/5	24/6	26/10	26/6	25/7	32/-	25·0
Minders, nett.....	31/6	32/-	31/2	32/3	33/2	41/10	26·1
Big piecers, average	—	—	—	—	15/2	19/-	25·3
Little piecers, aver- age*.....	—	—	—	—	10/9½	14/-	29·6
All piecers, average*	12/5	12/2½	13/5	13/3	13/-	16/7	27·7
Level of list prices	—	—	—	100	85	105	23·5

\* Two half-timers where known being taken as one full-timer.

These figures consist of an extract for 1870-72 from the previous table, showing the earnings on mules of 69—84 dozen spindles; for 1874, of a summary of similar particulars according to a "list" compiled by the operatives; and for 1876 of similar details from the Oldham list. In 1874-76 these undoubtedly reflect the average earnings very closely. By comparison with the census of 1886 and 1906 we see the changes which have taken place between two periods. Acting on the principle that all changes in size, speed, &c., have been brought about uniformly between the two periods, we are able by the percentage list changes to interpolate very nearly the earnings of both piecers and spinners from 1876 to 1907, but not later, because a very important alteration to the list came into

operation in January, 1908, as the rest of the agitation over the "fine counts" question.

A study of the whole of the evidence suggests the following averages, with an advance to piecers between 1833 and 1836, and a reduction by 1851. Wages in 1853 were stated in Duncley's *Charter of the Nations* to have been about the same as in 1846.

TABLE 15.—*Estimated wages of spinners and piecers, Oldham, 1833-1906.*

	Spinners.		Piecers (average).			Spinners.		Piecers (average).	
	s.	d.	s.	d.		s.	d.	s.	d.
1833.....	26	1	6	2	1889.....	35	3	13	10
'41.....	24	—	7	—	'90.....	35	4	13	10
'60.....	28	—	11	—	'91.....	37	3	14	11
'71.....	31	6	12	6	'92.....	37	3	14	11
'74.....	31	2	13	5	'93.....	36	2	14	4
'75.....	31	—	13	—	'94.....	36	2	14	4
'76.....	32	3	13	3	'95.....	36	8	14	4
'77.....	31	3	12	10	'96.....	36	2	14	4
'78.....	28	7	11	8	'97.....	36	2	14	4
'79.....	27	5	11	1	'98.....	36	3	14	4
1880.....	29	8	11	11	'99.....	37	7	14	10
'81.....	32	1	12	10	1900.....	39	7	15	8
'82.....	32	8	13	—	'01.....	39	7	15	9
'83.....	33	4	13	3	'02.....	39	7	15	9
'84.....	33	11	13	5	'03.....	39	8	15	10
'85.....	32	7	12	10	'04.....	39	8	15	10
'86.....	33	2	13	—	'05.....	39	8	15	11
'87.....	33	3	13	—	'06.....	41	10	16	7
'88.....	35	3	13	10					

Since 1875 little piecers have averaged about 40 per cent. of the gross wage for big and little piecers, so that if the piecers' average here given is multiplied by 2, about 60 per cent. will represent the big piecers' wage and 40 per cent. that of the little piecer.

It is to be noticed that if these figures fairly represent the facts an appreciable slackening of the rate of advance, apart from actual list changes, took place after 1886. For this slackening there is some probability. In the first case, speeds were greatly increased after the introduction of the list in 1876. By the list, 3 draws, that is 3 travels of the carriage in and out, for a 63-inch stretch, in fifty seconds, was taken as the standard, and all quicker speed than this was to be paid for as "over-speed." The method of payment was, that for every second quicker than 3 draws in fifty seconds an addition to the gross earnings of  $6\frac{1}{4}d.$  for mules of 64 dozen spindles,  $7\frac{1}{4}d.$  for 80, and  $7\frac{1}{2}d.$  for 92 dozen spindles was to be paid. Now, in 1876, 3 draws in fifty seconds was a quick speed. In 1870-72, out of nearly 400 observations only 15 pairs of mules ran quickly enough to qualify for payment for overspeed if the arrangement had been in existence. To-day the overspeed basis is 3 draws in forty-four seconds. By 1876 the average could not have been 3 in 50, or this would not have been the basis of the



overspeed clause. Probably, after the reduction of hours in 1875, and during the subsequent trade depression, when margins between raw cotton and yarn prices were appreciably finer, this means of economising was extensively adopted. Mr. Samuel Andrew, writing to the *Oldham Examiner and Courier* in August, 1885, gives numerous instances of the earnings on the same mules in 1877, when prices were at list net, and 1885, when prices were at 10 per cent. below. On the weft mules the averages were—

	Gross.		Piecers.		Mindere, nett.	
	s.	d.	s.	d.	s.	d.
1877.....	71	9	34	5	37	3
1885.....	69	7	31	—	38	7

and on the twist mules—

	s.		s.		s.	
	s.	d.	s.	d.	s.	d.
1877.....	63	2	27	—	36	2
1885.....	59	10	24	4	35	6

Actually, in 1885, they should have been 64s. 7d. weft, gross, and 56s. 10d. twist, gross, if no alteration in speed had taken place. They were, therefore, 5s. and 3s. above these earnings. Mr. Andrew ascribes the improvement to increased speed and improved machinery and material. Of course, the examples were all based on observations of large mules, and the average earnings are not typical, though the ratio between 1877 and 1885 may be.

### Twining.

Oldham is also a centre for “twining,” that is, doubling yarn on mules instead of on frames. In the Wage Census, 1886, Report, “twining” was given separately from spinning and weaving, and all places except Halifax were amalgamated. In 1906 the details are given of twinners’ earnings at Oldham and “Yorkshire district.” We cannot tell how far Oldham predominates in the figure for 1886, but probably Oldham twinners formed the bulk of the returns, and the figure for all places except Halifax has been given in the Oldham tabulation. The figures are not of much consequence as we have so few details for this occupation, but in Oldham the wages of twinners have, according to the evidence of a high authority, always approximated to those of spinners. The census returns bear the statement out.

### Weaving.

Oldham has never been much of a centre for plain calico weaving, but it is the chief centre for weaving of fustians and velveteens. In 1906, of 1,511 weavers (all working full time) returned to the Census, 1,008, or two-thirds, were in the Oldham district, 390 in the Yorkshire district, and the rest were not in any case a large enough group to be separately stated. There are two



special features about this branch of the trade, one being that it has almost invariably been busy when the ordinary calico trade has been slack, *e.g.*, 1879, 1886, 1893-94, and the other, that the number of looms per weaver is low and has not appreciably increased for thirty years. In 1886 the whole of the fustian weavers were given together in one section; in 1906 we have details for the two districts mentioned above. The comparison is as follows:—

	1886.			1906.		
	Looms per weaver.	Average per loom.	Average per weaver.	Looms per weaver.	Average per loom.	Average per weaver.
		<i>s.</i> <i>d.</i>	<i>s.</i> <i>d.</i>		<i>s.</i> <i>d.</i>	<i>s.</i> <i>d.</i>
Oldham .....	—	—	—	2·9	6 0·1	17 5
United Kingdom ....	3·16	5 3·6	16 10½	3·2	5 9·4	18 6

At Oldham, between 1886 and 1906, there was a slight increase of looms per weaver, mainly owing to the fact that the trade, which was then busy, had for some years been depressed, and the higher wages in the card room had attracted those who would otherwise have been weaving recruits. In the meantime, the proportion of the trade done at Oldham has increased, and as there are practically no men weavers and few women four-loom weavers at Oldham, and over one-half of the weavers in other districts are men on four looms, the effect of the change in the distribution of the trade has been to keep the average looms per weaver down.

In 1833, the average wage per head of all employed was 10s. 7*d.*; in 1886 it was 17s. 2*d.*, and in September, 1906, 21s., for those working full time, and 20s. 7*d.* for all, including those working more or less than full time. The *Labour Gazette* monthly returns meant for the year show the following averages per head of all employed full-, over-, and short-time workers included:—

	<i>s.</i> <i>d.</i>		<i>s.</i> <i>d.</i>		<i>s.</i> <i>d.</i>
1905 .....	19 10	1907 .....	21 2½	1909 .....	19 6
'06 .....	20 5	'08 .....	20 5	(January to August)	

The wage census shows 20s. 7*d.* as the mean of twelve monthly statements in 1906. The following index numbers show the changes in average wages in the Oldham district calculated from details given in the previous tables and adjusted in conformity with these averages (1886 = 100).

TABLE 16.—*Index numbers, Oldham, 1833-1906.*

1833 .....	61½	1870 .....	90½	1891 .....	107
'36 .....	67½	'74 .....	97½	'96 .....	110½
'40-41 .....	66½	'77 .....	101½		
'50 .....	64	'80 .....	97½	1900 .....	116½
'60 .....	79	'83 .....	102½	'06 .....	122
'66 .....	86	'86 .....	100		

## SECTION III.

*Bolton and district.*

We have not much difficulty in dealing with our information for this district, as on the whole it is consistent, and as far as spinning branches are concerned, sufficient. The card room presents no difficulty, the noticeable feature being that wages have been lower than in other districts consistently from 1883 until the present. In spinning, our difficulty is mainly caused through the change from hand mules to self-actors. We hear of these latter at fairly early dates, and the list still in operation dates from 1858, but hand mules were actually working as recently as three years ago. The details are given in Table 17.

TABLE 17.—BOLTON AND DISTRICT. *Average earnings of cotton operatives for an ordinary week's work, 1833-1906.*

Year .....	1824.	1833.	1837.	1841.	1841.	1842.	1850.	1850.	1850.	1855.	1860.
Authority .....	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Scutchers, &c. ....	—	—	—	—	—	—	—	—	—	—	—
Miners .....	—	—	—	—	—	—	—	—	—	—	—
Scutchers .....	—	—	—	—	—	—	—	—	—	—	—
Carding overlookers .....	—	—	—	—	—	—	—	—	—	—	—
Strippers and grinders .....	—	21 5	—	—	—	—	—	—	—	—	—
Combers .....	—	—	—	—	—	—	—	—	—	—	—
Draw-frame tenters .....	—	5 11	—	—	—	9 1/2, 10/	—	—	—	—	—
Slub-frame tenters .....	—	5 8 {	—	—	—	—	—	—	—	—	—
Inter-frame tenters .....	—	5 3	—	—	—	—	—	—	—	—	—
Rover and Jack frame tenters .....	—	5 3	—	—	—	—	—	—	—	—	—
Tenters average .....	—	—	—	—	—	—	—	—	—	—	—
Spinners .....	—	25 3	—	—	—	—	—	—	—	—	—
Big piecers .....	—	28 6	24 6	29 —	25 6	—	—	—	—	—	—
Chiefly Y.M. ....	31/6, 35/-	—	—	—	11 —	—	—	—	—	—	—
Little piecers .....	—	—	—	—	4 —	—	—	—	—	—	—
Half-time piecers .....	—	—	—	—	—	—	—	—	—	—	—
Piecers average .....	—	—	—	—	—	—	—	—	—	—	—
Ring and throstle overlookers .....	—	4 8	—	—	—	—	—	—	—	—	—
Winders .....	—	26 5	—	—	9 —	—	—	—	—	—	—
Reelers .....	—	7 6	—	—	—	—	—	—	—	—	—
Dooblers .....	—	—	—	—	6 5	—	—	—	—	—	—
Warpers .....	—	—	—	—	—	—	—	—	—	—	—
Weaving overlookers .....	—	12 9	—	—	—	—	—	—	—	—	—
Weavers, 2 looms .....	—	23 7	—	—	—	—	—	—	—	—	—
" 3 " .....	—	—	—	—	—	—	—	—	—	—	—
" 4 " .....	—	—	—	—	—	—	—	—	—	—	—
" average .....	—	9 3	—	—	—	—	—	—	—	—	—
" assistants .....	—	—	—	—	—	—	—	—	—	—	—
Dressers .....	—	23 10	—	—	—	—	—	—	—	—	—
Sizers .....	—	—	—	—	—	—	—	—	—	—	—
Warehousemen and packers .....	—	—	—	—	—	—	—	—	—	—	—
Mechanics .....	—	—	30 —	30 —	—	—	—	—	—	—	—
Average of all .....	—	9 3 1/2	—	—	—	—	—	—	—	—	—

\* Per loom.



TABLE 17 *Contd.*—BOLTON AND DISTRICT. *Average earnings of cotton operatives for an ordinary week's work, 1833-1906.*

Year .....	Authority ...	1877.	1877.	1880.	1882.	1883.	1883.	1884.	1884.	1885.
		s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	No. Wage.
Scutchers, &c.	W. and G.	12 -	-	-	-	11 -	-	-	s. d.	112 10 6
Mixers	M.	-	-	-	-	-	-	-	10 6	33 18 1
Scutchers	M.	-	-	-	-	-	-	-	-	33 20 7
Carding overlookers	M.	-	-	-	-	-	-	-	-	45 33 1
Strippers and grinders	M.	21 7	-	20 -	-	20 2	-	40/-, 28/-	21 6	165 20 4
Cumbers	W. and G.	13 6	-	-	-	13 3	-	-	-	150 13 5
Draw-frame tenters	W. and G.	13 4	-	13 5	-	13 8	-	12/6, 13/6	-	252 12 4
Slub-frame tenters	W. and G.	12 11	-	13 2	-	13 8	-	10 9	12 -	809 14 -
Inter-frame tenters	W. and G.	-	-	-	-	16 7	-	10 9	15 6	
Rover and Jack frame tenters	W. and G.	16 1	-	15 9	-	-	-	14 6	-	1,101 13 7
Tenters' average	W. and G.	-	-	-	-	-	-	-	-	43 38 6
Spinners' overlookers	M.	-	-	-	-	-	-	-	-	84 12 9
Spinners	M.	36 2	-	32 6	41/-, 52 -	35 4	32 2	35/-, 50/-	-	883 8 7
Big piecers	Chiefly Y.M.	-	-	-	-	-	13 -	-	-	1,030 3 7
Little piecers	L. and G.	-	-	-	-	-	8 9	18/-, 12/-, 10/-	-	1,913 10 7 1/4
Half-time piecers	L. and G.	-	-	-	-	-	-	2 6	-	2,001 28 2
Piecers' average	-	10 8	-	10 2	-	10 4	-	-	-	5 12 1
Ring and throstle overlookers	M.	-	-	-	-	-	-	-	-	350 12 4
Winders	W. and G.	12 -	-	12 -	-	12 -	-	16 6(2)	-	421 12 8
Reelers	W. and G.	13 -	-	12 6	-	13 6	-	16 -	-	70 16 7
Doublers	W. and G.	12 -	-	12 -	-	12 -	-	-	-	72 37 6
Warpers	W.	-	-	-	-	-	-	-	-	-
Weaving overlookers	W.	30 3	-	-	18 6	-	-	18 -	-	-
Weavers, 2 looms	M.	-	-	-	41 8	-	-	42 -	-	-
" 3 "	W. and G.	-	-	-	-	-	-	13/-, 14/-	-	-
" 4 "	W. and G.	-	-	-	-	-	-	20/-, 21/-	-	-
" average	M. W. and G.	5 9*	-	20 3	-	-	-	20/-, 21 6	-	1,884 15 -
" assistants	Cb.	-	-	6 4*	-	-	-	5 6*	-	507 25 6, 4 8
Dressers	M.	-	-	52 -	-	-	-	45 -	-	29 39 2
Sizers	M.	-	-	41 -	-	-	-	38 -	-	112 33 1
Warehousemen and packers	M.	-	-	-	-	-	-	31 6	-	79 32 7
Mechanics	M.	35/-, 38/-	-	-	-	-	-	-	-	10,328 14 11
Average of all	-	-	-	-	-	-	-	-	-	-

\* Per loom.

† Excluding half-timers.

‡ Including half-timers.

§ Half-timers.



TABLE 17 *Contd.*—BOLTON AND DISTRICT. *Average earnings of cotton operatives for an ordinary week's work, 1833-1906.*

Year .....	1886.	1891.	1895.	1900.	1905.	1906.	1906.	1906.
Authority ...	17.	17.	17.	17.	17. {	2 Bolton.	2 Leigh.	2a Combined.
	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	No.	Wage. <i>s. d.</i>	No. Wage. <i>s. d.</i>
Scutchers, &c.....	10 6	11 6	11 6	12 -	12 8	—	—	—
Mixers .....	—	—	—	—	—	63	—	63
Scutchers.....	—	—	—	—	—	55	—	55
Carding overlookers.....	—	—	—	—	—	152	—	174
Strippers and grinders.....	—	—	—	—	—	22	39 9	38 7
Combers .....	19 8	24 8	26 1	29 5	30 7	212	29 5	218
Draw-frame tenters.....	12 9	13 10	14 5	15 5	16 -	409	—	—
W. and G.	12 11	14 10	15 5	16 1	16 10	263	17 6	316
Slub-frame tenters.....	12 10	14 7	15 -	15 10	16 3	329	16 9	419
W. and G.	12 10	14 7	15 -	15 10	16 3	329	16 9	419
Inter-frame tenters.....	—	—	—	—	—	1,051	13 2	1,278
W. and G.	—	—	—	—	—	2,052	16 8	2,500
Rover and Jack frame tenters.....	15 6	17 7	18 2	19 1	19 11	418	16 8	18 8
W. and G.	—	—	—	—	—	101	48 4	115
Tenters' average.....	—	—	—	—	—	1,806	47 6	2,258
Spinners' overlookers.....	33 5	38 1	39 11	41 7	43 -	424	15 -	2,213
Chiefly Y.M.	—	—	—	—	—	1,478	9 9	2,214
Big piecers .....	—	—	—	—	—	—	—	—
Little piecers .....	—	—	—	—	—	—	—	—
L. and G.	—	—	—	—	—	—	—	—
Half-time piecers.....	9 10	11 4	11 4	12 2	12 3	3,567	12 4	4,427
Piecers' average.....	—	—	—	—	—	—	—	—
Ring and throstle overlookers.....	—	—	—	—	—	—	—	—
W. and G.	—	—	—	—	—	—	—	—
Winders .....	11 6	12 6	13 6	14 9	15 3	290	13 7	290
W. and G.	13 6	13 6	13 6	14 -	14 -	1,139	11 9	1,359
Reelers .....	—	—	—	—	—	340	12 10	489
W. and G.	—	—	—	—	—	187	13 5	235
Doublers .....	11 6	12 6	13 6	14 9	15 3	129	17 10	169
W. and G.	—	—	—	—	—	139	43 9	191
Warpers .....	—	—	—	—	—	—	—	—
Weaving overlookers.....	—	—	—	—	—	—	—	—
W. and G.	—	—	—	—	—	—	—	—
Weavers, 2 looms.....	—	—	—	—	—	—	—	—
W. and G.	—	—	—	—	—	—	—	—
W. and G.	—	—	—	—	—	—	—	—
M.W. and G.	—	—	—	—	—	2,866	15 9	4,313
average.....	—	—	—	—	—	—	—	—
Ch. assistants.....	—	—	—	—	—	1,417	—	17 7
Dressers .....	—	—	—	—	—	—	—	—
W. and G.	—	—	—	—	—	16	—	—
Sizers.....	—	—	—	—	—	220	25 6	16
W. and G.	—	—	—	—	—	48	35 9	298
Warehousemen and packers.....	—	—	—	—	—	106	34 8	24 6
Mechanics .....	—	—	—	—	—	21	—	127
Average of all.....	—	—	—	—	—	18,872	16 6	24,547
								18 2

We have some material which could not easily be tabulated in this table. In the *Quarterly Review*, of 1859, it is stated that the Preston spinners in 1836 struck for the Bolton rate of 26s. 6d. Chadwick, in 1859, gave the following details on the authority of Mr. Ashworth:—

*Spinners' average wages, 1842-59.*

Year.	400 spindles each mule.					
	Per 20 lbs.		Gross.		Piecers.	
	s.	d.	s.	d.	s.	d.
1842 .....	4	7	36	—	16	—
'46 .....	4	11	38	—	16	—
'50 .....	4	4	35	6	16	—
'59 .....	5	1	41	—	16	—
On "double-decked" mules.						
'59 .....	3	11½	59	10	29	—

These particulars relate to self-acting mules. Double-decking is often heard of in Factory Inspectors' Reports, and means the coupling up of two pairs of short mules under the control of one spinner. At one time it was frequently adopted as a means of competition with long mules, but it never really was sufficiently in vogue appreciably to affect the average wage. Double-decked mules are still to be found in various parts of Lancashire, but not to any great extent. The most important point in this table is the evidence of an advance after 1842, the reduction and the considerable advance between 1850 and 1859.

Speaking in the debate on the Factory Act, 1844, John Bright gave the following particulars relating to Ashworth's, Bolton:—

	Number.	Average.	
		s.	d.
Males, 13—16 years .....	126	4	8½
.. 17—21 ..	97	9	5½
.. 21 years and upwards .....	136	21	2½
Females, 13—16 years .....	113	4	8
.. 17—21 ..	135	6	7
.. 21 years and upwards .....	68	8	9½
Total .....	675	9	5½

Piecers' wages at Bolton have always been a matter of individual bargaining between the spinner and piecer, and piecers' wages are and always have been lower there than elsewhere. Attempts have been made on several occasions to standardise the piecers' wages, and in 1998 a scale was decided on. In 1879 the details of a scheme

drawn up by the self-actor minders throw some light on the earnings of that time. They suggested that the earnings should be not less than :—

	Spinner.		Piecer.		Creeler.	
	s.	d.	s.	d.	s.	d.
For 500 spindles .....	25	—	9	6	6	6
" 600 " .....	27	6	10	6	7	—
" 700 " .....	30	—	11	6	7	6
" 800 " .....	32	6	12	6	8	—
" 900 " .....	35	—	13	6	8	6
" 1,000 " .....	37	6	14	6	9	—

This scale, however, never came into practice.

In 1884, Mr. J. T. Fielding, the operatives' secretary, gave the U.S.A. Consul the following statement of the "actual average of all mules, good and bad, within two miles radius round Bolton":—

Spindles.	Wages, net.		Number of piecers.		Wages of piecers.	
	Hand mules.	Self-actors.	Hand mules.	Self-actors.	Hand mules.	Self-actors.
	s.	d.	s.	d.	s.	d.
600 and under	32	—	30	6	19	—
602— 750 ....	35	6	31	2	20	—
752— 800 ....	38	—	29	3	26	—
802— 850 ....	39	—	30	2	26	—
852— 900 ....	36	—	33	10	26	—
902— 950 ....	42	—	36	4	26	—
952—1,000 ....	38	6	37	—	26	—
1,002—1,050 ....	40	—	39	—	26	—
1,052—1,100 ....	35	9	40	3	20	—
1,102—1,150 ....	—	—	39	3	39	—
1,152 and up ....	38	6	44	6	39	—

The bulk of the spinners were stated to have from 900 to 1,050 spindles. Except on the very long mules the earnings of hand mule spinners were appreciably higher than those of self-actor minders.

In weaving, besides the ordinary calico woven on narrow looms, Bolton is a centre for the weaving of quilts, &c., on broad looms. The earnings per loom on the broad looms are so much higher than on the narrow looms that their inclusion or omission makes a considerable difference to the average. The only weaving record we have, given on the authority of Mr. George Lord, merely states the average per loom. Bolton averages have never been high, and Mr. Lord's figures suggest that they may include the broad looms. In any case, it is necessary to know the averages separately, and they have been omitted from Table 17, so they may be given here in more detail :—

TABLE 18.—*Weaving, Bolton and district.*

Omitting broad looms.									
		1886.		1906.				1906.	
		Number		Bolton.		Leigh.		District.	
				Number	Average.	Number	Average.	Number	Average.
			<i>s. d.</i>		<i>s. d.</i>		<i>s. d.</i>		<i>s. d.</i>
2 looms .....		589	10 10½	928	13 4	461	10 9	1,389	12 6
3 „ .....		379	15 9	1,212	18 1	337	15 9	1,549	17 7
4 „ .....		711	17 4	644	22 11	649	20 —	1,293	21 6
All .....		1,659	14 10	2,784	17 7	1,447	15 9	4,231	17 1
Looms per									
weaver .....		3·07		2·86		3·13		2·95	
Average per									
loom .....		4/9½		6/2·2		5/4·2		5/9·6	
Including broad looms.									
1 loom .....		173	12 10	—	—	—	—	—	—
2 looms .....		641	12 4	1,010	15 9	461	10 9	1,471	14 3
3 „ .....		359	15 9	1,212	18 1	337	15 9	1,549	17 7
4 „ .....		711	17 4	644	22 11	649	20 —	1,293	21 6
All .....		1,884	15 —	2,866	18 3	1,447	15 9	4,313	17 7
Looms per									
weaver .....		2·85		2·8		3·13		2·9	
Average per									
loom .....		5/34		6/6½		5/4·2		6/0·6	

The advance in average earnings between 1886 and 1906 is thus found to be greater if the broad looms are included than if omitted. On the assumption that Lord's 5*s.* 9*d.* per loom in 1883 includes some broad looms, and that the number of looms per weaver increased from 2·2 in 1850 to 2·85 in 1886, we get the following as our weavers' averages at various years:—

	1883	1850	1860.	1874	1877	1883	1886.	1906.
Average per loom ...	—	4/7	5·2	4/9	5/9	5/6	5·34	6/0·6
Looms per weaver	—	2·2	2·4	2·7	2·8	2·8	2·85	2·9
Average per weaver	9·3	10/1	12½	12/10	16/1	15½	15/-	17/7

The trade union stated the average wage in 1892 as 20*s.*, presumably referring to the four-loom weaver, and not including girls.

In the census of 1833 the average wage of all employed was 9*s.* 3½*d.*; in 1886, 14*s.* 11*d.*, and in 1906, 18*s.* 2*d.* for those working full time, and 17*s.* 10*d.* for all employed. These figures relate to

September. Taking the mean numbers paid wages and the amounts paid on the last pay day in each month the average was 17s. 10d. This may be compared with the averages from the similar monthly returns in the *Labour Gazette*, viz. :—

	s.	d.		s.	d.		s.	d.
1905 .....	17	1½	1907 .....	18	7	1909 .....	18	4
'06 .....	17	10½	'08 .....	18	3	(January to August)		

Working out the intermediate years from the tabulated details we get the following index numbers representing the changes in average wages of cotton operatives in the Bolton district, 1833 to 1906. (1886 = 100):—

TABLE 19.

1833 .....	62½	1863-64 .....	80½	1886 .....	100
'36 .....	63½	'66 .....	89½	'91 .....	110½
'40-41 .....	65½	'71 .....	93	'96 .....	113
'46 .....	68½	'74 .....	101½		
'50 .....	67½	'77 .....	106½	1900 .....	119
'55 .....	71½	'80 .....	101½	'06 .....	121½
'60 .....	81½	'83 .....	103½		

*Ashton-under-Lyne and district.*

This is a cotton spinning district of sufficient importance to make it very regrettable that we have very little material about wages, and that what we have is practically confined to the period 1833-41, and to 1886 and 1906. The details are given in Table 20, and call for no comment. Spinners' wages are mainly governed by the local list; the counts spun average lower than 40s, and the average earnings are the same as at Oldham, viz., 41s. 10d., and only 6d. per week higher than the average for Lancashire and Cheshire. Except that weavers' earnings are rather lower, this correspondence of the spinners' average to the average of the Lancashire and Cheshire area is typical of practically all the occupations.

We learn from the *Quarterly Review* of 1859 that in 1829 3,000 persons in Ashton and Stalybridge were involved in a ten weeks' strike by the coarse spinners, who earned from 28s. to 31s. This apparently had some connection with a strike at Manchester at the same date. The fine spinners were stated to have been earning from 30s. to 35s. at that time.

We are not able to obtain any very useful index numbers from our details for this district. The series indicates—

1833 .....	65	1840-41 .....	63½	1903 .....	119½
'36 .....	67½	'86 .....	100		

The numbers for 1833-41 do not vary greatly from those for the Oldham district, and between 1886 and 1906 the advance, namely, 19 per cent., is again not unlike the 21 per cent. for Bolton and 22 per cent. for Oldham. The changes in piece price levels have almost invariably followed those at Oldham for the past thirty years, so that unless some extraordinary occurrence has altered the



TABLE 20.—ASHTON-UNDER-LYNE AND DISTRICT. *Average earnings of cotton operatives for an ordinary week's work, 1833-1906.*

	Year .....	1833.	1836-37.	1841.	1836-37.	1841.	1836-37.	1841.	1841
	Authority	4 & 40.	54a.	54a.	54b.	54b.	54c.	54c.	54d.
		s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Carding overlookers.....	M.	20 10	—	—	—	—	—	—	—
Strippers and grinders ..	M.	—	—	—	—	—	—	—	—
Draw-frame tenters .....	W.	7 9	—	—	—	—	—	—	—
Slubber tenters .....	W.	8 —	—	—	—	—	—	—	—
Intermediate tenters ...	W.	—	—	—	—	—	—	—	—
Roving tenters .....	W.	8 6	—	—	—	—	—	—	—
Tenters' average .....	W.	—	—	—	7/-, 12/6*	—	—	—	—
Spinning overlookers ...	M.	25 11	—	—	—	—	—	—	—
Spinners .....	M.	20 8	27 —	24 0	24/-, 26/-	22/-, 25/-	27/-, 30/-	24 —	17/-, 2
Big piecers .....	L. and M.	} 5 6 {	9/-, 7/-,	9/-, 7/-,	—	—	—	—	—
Little piecers .....	L.				—	—	—	—	—
Piecers' average.....	L. and M.	5 6	5/-	5/-	—	—	—	—	6
Scavengers .....	L.	3 7	—	—	—	—	—	—	—
Throstle and ring } spinners .....	W. and G.	8 6	—	—	—	—	—	—	—
Weaving overlookers ...	M.	22 8	—	—	—	—	—	—	—
Warpers .....	W.	10 2	—	—	—	—	—	—	—
Reelers .....	W. and G.	—	10 —	7 9	—	8/-, 11/-	10 0	7 9	—
Weavers, 2 looms .....	W. and G.	—	—	—	—	—	—	—	—
"    3    "    .....	W. G. & L.	—	—	—	—	—	—	—	—
"    4    "    .....	W. and M.	—	—	—	—	—	—	—	—
"    average .....	—	10 11	10 6	10 6	—	—	—	—	—
Dressers .....	M.	24 3	—	—	—	—	—	—	—
Average of all.....	—	10 7½	—	—	—	—	—	—	—

	Year .....	1837.	1841.	1877.	1886.	1906.	1906	
	Authority	54c.	54c.	17.	1.	2.	17.	
		s. d.	s. d.	s. d.	No.	Aver.	No.	Aver.
Carding overlookers.....	M.	—	—	—	113	34 4	75	40 1
Strippers and grinders ..	M.	—	—	23 —	368	21 5	186	34 10
Draw-frame tenters .....	W.	—	—	15 10	416	16 2	278	21 5
Slubber tenters .....	W.	—	—	} 17 10 {	1,527	15 10	150	20 11
Intermediate tenters ...	W.	—	—				198	20 2
Roving tenters .....	W.	—	—	16 9	—	—	663	19 5
Tenters' average .....	W.	—	—	—	1,943	15 11	1,109†	24 4†
Spinning overlookers ...	M.	—	—	—	81	36 6	72	42 10
Spinners .....	M.	—	20/2, 27/4	39 —	1,321	31 1	1,265	41 10
Big piecers .....	L. and M.	—	—	16 —	1,234	14 2	1,280	17 11
Little piecers .....	L.	—	—	9 6	814	9 8	1,131	11 5
Piecers' average .....	L. and M.	—	—	12 9	2,648	12 5	2,411	14 11
Scavengers .....	L.	—	—	—	366	3 6	—	—
Throstle and ring } spinners .....	W. and G.	—	—	—	105	12 11	227	14 10
Weaving overlookers ...	M.	—	—	—	208	37 4	161	42 2
Warpers .....	W.	—	—	—	176	17 9	92	19 7
Reelers .....	W. and G.	—	—	—	1,779	12 11‡	1,064	13 9§
Weavers, 2 looms .....	W. and G.	—	—	—	1,255	11 1	849	12 4
"    3    "    .....	W. G. & L.	—	—	—	3,168	16 19	2,575	17 10
"    4    "    .....	W. and M.	—	—	—	1,476	20 6	645	21 11
"    average .....	—	—	—	—	5,899	16 6	4,069	17 4
Dressers.....	M.	—	—	—	66	38 10	17	43 1
Average of all.....	—	13 6	12 —	—	18,319	16 3	14,452	19 5

\* Unchanged since 1832.

† Including 120 tenters unclassified at 21s. 9d.

‡ Half time.

§ Reelers and winders combined.

normal course of wages (and of this we have no evidence) it is not improbable that the course of wages at Ashton-under-Lyne and district has been similar throughout to the course of wages at Oldham. In 1886 the average of all employed was 16s. 3d. In 1906 the average of those working ordinary full time was 19s. 5d., and that of all workers, including those who worked more or less than full time, was 19s. 3d., and the average as shown by the numbers employed and wages paid at the last pay-day in each month was 19s. 2d. The averages shown by the similar figures in the *Labour Gazette* since 1905 have been—

	s.	d.		s.	d.		s.	d.
1905 .....	19	5	1907 .....	20	—	1909 .....	18	9
'06 .....	19	7	'08 .....	18	7	(January to August)		

### *Stockport and Neighbourhood.*

As at Ashton, so at Stockport, there is a considerable amount of material for the period 1833-42, and practically no further information until the Census of 1886. Before 1833 we have a statement which is of value, and some general information difficult to fit into any scheme, yet of interest in itself. The general tabulation of the details is given in Table 21.

*Spinning.*—A witness to the Commission on Artizans and Machinery, stated that in 1814, 3d. per lb. was paid to jenny spinners for spinning number 12's, and that working 14 hours a day the earnings were 24s. a week. In 1818 the price had fallen to 2½d. per lb. and the earnings to 15s., 16s. A strike took place for an advance to 3d. per lb. but presumably it was unsuccessful, as in 1824 the price was still 2½d. but the earnings had advanced to 17s. 6d., 18s. and 19s. a week. As has already been pointed out,<sup>6</sup> the range of spinners' earnings was so great during the early years of the industry that these low rates do not necessarily conflict with those of first-class spinners given for corresponding years in the tables.

In 1842 the intense depression of trade caused several comparisons of wages with previous years to be made, and in the Report of the Assistant Poor Law Commissioners (XXXV of 1842) we learn that reductions in spinning prices per 1,000 hanks had been made from 2s. 11d. in 1839 to 2s. 6d. in 1841, and 2s. 1d. in 1842 for precisely the same work, and that this 30 per cent. reduction was "about the general rate for spinning." The same authority gives the reduction in the card room as 7½ per cent. since 1839, and 9 or 10 per cent. in weaving. In 77 firms, in 1836, 8,775 operatives averaged 12s. 9¼d. per week, and in 1841, 8,381 averaged 11s. 1½d. when working full time. Much short time was worked, however, and there was a "six weeks' turnout." The average reduction between 1835 and 1842 is said by this authority to have been 15 per cent. on the 1842 wages, and Cooke Taylor, in his "Tour through the manufacturing districts of Lancashire," says, that in 1834-36 trade was prosperous and wages were high, and that since 1836 there have been reductions

<sup>6</sup> See Section II, p. 27.

equal to 15 or 20 per cent. In 1853 a famous successful strike for an advance of 10 per cent. took place.

The averages based on full-time workers, namely—

	s.	d.		s.	d.		s.	d.
1833 .....	10	11	1841 .....	11	1½	1903 .....	19	2
'33 .....	12	9	'36 .....	13	11			

indicate that between 1833 and 1886 wages in the Stockport district did not advance as quickly as in most other parts of Lancashire and Cheshire. In 1833 the averages at Hyde and Stockport were higher than at any other centre, and the average of all three places (10s. 11d.) was higher than at any other district. In 1886 the average was 1s. 4d. per week under the average for Lancashire and Cheshire, and in 1906 seven districts have a higher average. Between 1886 and 1906 the advance per head was 38 per cent., which is so much above that of the industry as a whole that it suggests that the 1886 average was too low.

At the census of 1906 the average wage for all full-time workers was 19s. 2d., for all workers 19s., and the mean average of all for the year, as indicated by twelve monthly statements of total numbers and wages paid, was 18s. 7d. With this latter figure the similar monthly returns in the *Labour Gazette* may be compared as follows:—

	s.	d.		s.	d.		s.	d.
1905 .....	18	4	1907 .....	18	10½	1909 .....	18	1½
'06 .....	18	9½	'08 .....	19	1	(January to August)		

The index numbers indicated by these averages are:—

1886 = 100.					
1833 .....	78½	1841 .....	80	1903 .....	137½
'36 .....	91½	'86 .....	100		

#### *North and North-East Lancashire districts.*

*Preston, Blackburn, Darwen, Accrington, Chorley, Clithorpe, &c.*

It has been found advisable for several reasons to tabulate the details relating to all these centres together. In the first place weaving is the chief branch of the trade carried on in the district, practically all of it under the uniform list which superseded the local lists in 1892, so that except that there are some six loom weavers in the Blackburn district and none in the Preston district, the conditions of labour are very similar, and the wages of the most important class of operatives may be expected to approximate closely. Again, there is only one Employers' Association for the whole district, and the general changes in wages arranged by it have affected each centre. These reasons would, in themselves, be sufficient to make it more convenient to tabulate the details for the various towns together, but, in addition, friends in this district who have very kindly sent me details relating to their mills have stipulated that these details must not be published in any form which would lead to their identification. As indication of the particular centre might lead to identification, I have made the district allusion as

TABLE 21.—STOCKPORT AND DISTRICT. *Average earnings of cotton operatives for an ordinary week's work, 1816-1906.*

Year .....	1816.	1820.	1824.	1826.	1831.	1833.	1833.
Place .....	Hyde.	Hyde.	Stock- port.	Hyde.	Hyde.	Stock- port.	Hyde.
Authority.....	3.	3.	42.	3.	3.	4 and 40.	4 and 40.
	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>
Carding overlookers .....	—	—	—	—	—	23 8	20 6
Strippers .....	—	—	—	—	—	—	—
Grinders .....	—	—	—	—	—	7 8	6 4
Draw-frame tenters .....	—	—	—	—	—	8 —	8 6
Slubber tenters .....	—	—	—	—	—	9 4	8 5
Intermediate tenters .....	—	—	—	—	—	—	—
Roving tenters .....	—	—	—	—	—	26 3	30 4
Tenters, average .....	—	—	—	—	—	—	—
Spinning overlookers .....	37 —	35 6	—	35 —	34 9	—	—
Spinners, 1st class.....	30 —	27 3	—	27 —	28 —	—	—
" 2nd " .....	—	—	—	—	19 8	—	—
" 3rd " .....	—	—	—	—	—	24 3	23 9
" average.....	—	—	—	—	—	—	—
Big piecers .....	—	—	—	—	—	—	—
Little piecers .....	—	—	—	—	—	—	—
Piecers' average .....	—	—	—	—	—	5 10	4 7
Scavengers .....	—	—	—	—	—	3 4	3 7
Throstle spinners .....	—	—	—	—	—	8 4	8 7
Warpers .....	—	—	—	—	—	12 4	12 7
Twisters-in .....	—	—	—	—	—	—	—
Weaving overlookers .....	—	—	—	—	—	29 7	25 8
Weavers, 2 looms .....	—	—	—	—	—	—	—
" 3 " .....	—	—	—	—	—	—	—
" 4 " .....	—	—	—	—	—	—	—
" average .....	14 —	14 —	9/-, 10/-	13 —	12 —	10 8	11 1
Dressers .....	30 —	30 —	—	30 —	30 6	29 1	28 9
Average of all.....	—	—	—	—	—	11 —	11 4

Year .....	1833.	1835.	1838.	1841.	1842.	1844.
Place .....	Glossop.	Hyde.	Hyde.	Hyde.	Stock- port.	Hyde.
Authority.....	4,040.	3.	3.	3.	54.	3.
	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>
Carding overlookers.....	21 6	—	—	—	—	—
Strippers .....	—	—	—	—	10/-, 12/-	—
Grinders .....	—	—	—	—	11/-, 14/-	—
Draw-frame tenters .....	7 4	—	—	—	7/6, 8/6	—
Slubber tenters .....	7 9	—	—	—	—	—
Intermediate tenters .....	—	—	—	—	—	—
Roving tenters .....	7 11	—	—	—	—	—
Tenters' average .....	—	—	—	—	{ 8/- to 9/6 9/- to 11/- }	—
Spinning overlookers .....	30 5	—	—	—	—	—
Spinners, 1st class.....	—	—	—	—	—	—
" 2nd " .....	—	—	—	—	—	—
" 3rd " .....	—	—	—	—	—	—
" average .....	22 11	—	—	—	20/- to 24/-	—
Big piecers .....	—	—	—	—	12 —	—
Little piecers .....	—	—	—	—	—	—
Piecers' average.....	4 11	—	—	—	—	—
Scavengers .....	3 5	—	—	—	—	—
Throstle spinners .....	8 8	—	—	—	8/-, 10/-	—
Warpers .....	18 —	—	—	—	—	—
Twisters-in .....	—	—	—	—	12 —	—
Weaving overlookers .....	31 1	—	—	—	—	—
Weavers, 2 looms .....	—	—	—	—	—	—
" 3 " .....	—	—	—	—	—	—
" 4 " .....	—	—	—	—	—	—
" average .....	11 6	12 6	11 —	9 9	11 —	11 —
Dressers .....	28 10	—	—	—	{ 20/-, 25/- 26/-, 30/- }	—
Average of all.....	10 1	12 9½* 1836.	—	11 1½*	—	—

\* From Authority 54, and refers to the district.



TABLE 21 *Contd.*—Average earnings of cotton operatives, Stockport district.

Year .....	1858.	1886.		1891.	1906.	
Place .....	Stockport.	District.		Hyde.	District.	
Authority .....	12b.	1		11.	2.	
	s. d.	No.	Aver. s. d.	s. d.	No.	Aver. s. d.
Carding overlookers.....	32 6	43	31 8	—	50	38 10
Strippers .....	—	} 103	19 6	—	63	29 9
Grinders .....	—		13 -	—	155	21 5
Draw-frame tenters .....	—	} 118	14 -	—	130	19 11
Slubber tenters .....	—		—	—	187	19 5
Intermediate tenters .....	—	} 466	—	—	388	19 9
Roving tenters .....	—		13 10	—	860	20 -
Tenters' average .....	—	29	36 1	—	37	42 4
Spinning overlookers .....	—	—	—	39 -	54	49 4
Spinners, 1st class .....	—	—	—	36 -	172	49 11
„ 2nd „ .....	—	—	—	30 -	417	37 5
„ 3rd „ .....	—	—	—	—	643	41 3
„ average .....	23 -	304	31 2	—	559	17 7
Big piecers .....	—	288	13 4	—	447	11 4
Little piecers .....	—	223	9 1	—	1,006	14 10
Piecers' average.....	—	511	11 6	—	—	—
Scavengers .....	—	47, 18†	5 5, 3†	—	—	—
Throstle spinners .....	—	229	11 1	—	396	15 1
Warpers .....	—	44	17 2	—	156	20 3
Twisters-in ... ..	—	M. 14	19 7	—	24	22 5
		W. 21	16 -		—	—
		All 35	17 5		—	—
Weaving overlookers .....	—	61	35 2	—	116	42 7
Weavers, 2 looms ..	—	40	10 10*	—	381	11 6
„ 3 „ .....	14 6	414	15 11	—	520	19 1
„ 4 „ .....	—	724	18 6	—	1,986	22 2
„ average .....	—	1,588	15 8*	18 -	2,887	20 3
Dressers .....	30 -	18	36 7	36 -	22	41 5
Average of all.....	—	6,072	13 11	—	9,721	19 2

\* Excluding 8 men at 20s. 1d. and 109 women at 13s. 4d. on special goods. Their inclusion raises the average for 2-loom weavers to 11s. 5d., and reduces the average of all weavers to 15s. 6d.

† Half-timers.

vague as possible. Over and above this, there has been rescued from the pulping mill an old “average” book, such as is kept in one form or another by practically all manufacturers, and while from internal evidence it is certain that it relates to some part of the North and North-East Lancashire district, it affords no indication as to the particular centre. Its value in conjunction with the other information as to weaving, winding, warping, &c., is so great that we should have to use it in comparison with the other details for the Preston, Blackburn and Accrington districts. The record marked C in Table 22 is from this source. The significance of the figures is discussed later.

The tabulation of the detailed statements of wages in these districts is given in Table 22.













Notes to Table 22.

The figures for Preston in 1836 are from Ward's *Workmen and wages at home and abroad*.

In 1842, in the column marked \*, the figures Marked (a) are for Accrington, (b) are for Chorley, (c) are for Darwen, and (d) are for Blackburn. With regard to the figures for Blackburn in 1855-61, (3A), it was stated in the Returns of Wages that these rates of wages remained unchanged during 1855-61, except "that a reduction of 5 per cent. was made in the wages of spinners and card room hands, and of 1s. per week in the wages of grinders in September, 1861."

The figures in column B are from S. Smiles' *Workmen's earnings, strikes and savings*, 1862; and in column 12B are quoted in Ellison's *Handbook to the cotton trade*, from Mr. Robertson's *A few months in America*, p. 216. Those in column C are from the "average" book mentioned above.

The amalgamation of the returns for Blackburn and Darwen in 1886 and Blackburn and Accrington in 1906 is made necessary by a change of district classification by the Board of Trade in the 1906 census. In the first year the districts were Blackburn and Darwen, Accrington and Clitheroe, and in the second, Blackburn district, including Darwen and Clitheroe and Accrington district. Comparisons between 1886 and 1906 can only be made, therefore, by amalgamation of these districts.

From two other mills in this district there have been obtained records of weavers' earnings for a considerable period. The number of looms per weaver is not known accurately, but as an indication of the probable course of earnings, the number at one mill where the details were ascertainable have been presumed to apply in these cases also. The general question of the number of looms per weaver will be discussed later. The details for these two mills are given in Table 23.

TABLE 23.—*Estimated earnings of weavers in two mills in the north and north-east Lancashire district.*

	1871.	1874.	1877.	1880.	1883.	1886.	1891.
	d.	d.	d.	d.	d.	d.	d.
Average per loom. Mill I	76.1	76.8	78.1	68.3	77.6	78.7	81.4
" " " II	—	69.8	75.8	67.0	76.4	79.0	80.5
Estimated looms per weaver	2.97	3.07	3.17	3.2	3.2	3.2	3.2
Estimated average per weaver. Mill I	19/-	19/10	20/10	18/3	20/8	21/-	21/8
Estimated average per weaver. Mill II	—	18/-	20/3	17/10	20/4	21/1	21/6

	1894.	1897.	1900.	1905.	1906.	1907.	1908.
	d.	d.	d.	d.	d.	d.	d.
Average per loom. Mill I	78.6	78.7	79.0	88.7	86.8	89.2	90.1
" " " II	78.2	79.8	79.0	87.9	91.1	90.2	88.9
Estimated looms per weaver	3.2	3.2	3.2	3.2	3.2	3.2	3.2
Estimated average per weaver. Mill I	21/-	21/-	21/1	23/8	23/8	23/9	24/-
Estimated average per weaver. Mill II	20, 10	21/3	21/1	23/5	24/4	24/-	23/8

I have been unable to trace the changes in wages under the Blackburn spinning list of 1853, but as it is still in use it will be



useful to note that, adopted in 1853, a reduction of 5 per cent. took place in 1861; advances, making prices 10 per cent. above 1853, took place by 1867, when the list was revised. The period between this date and June 20th, 1878, is blank, but at that date prices were at standard. In April, 1879, a 5 per cent. reduction left prices at 5 per cent. under 1853. This reduction was returned in 1880. Another 5 per cent. advance took place in 1881, and August, 1888, making prices 10 per cent. above standard. Since 1888 they have followed the Oldham list changes, and in May, 1907, were 25 per cent. above 1853.

*Sequence of wages at Clitheroe.*

The wage census incorporates the returns for Clitheroe with Blackburn in 1906, and presumably with Blackburn also in 1886. We have, however, some very valuable information relating a very large cotton spinning and weaving concern at Low Moor, Clitheroe, covering the period 1833 to 1909. The figures are taken from "The Reply of the Free Trade League to the Report of the Tariff Commission on the Cotton Industry," by Professor S. J. Chapman, and the firm has kindly supplied me with the figures for 1909. Table 24 shows the particulars as given by Professor Chapman.

This exhausts such information as lends itself to tabulation, but we have still several items of considerable value, mainly relating to two great strikes which have taken place. The first of these was the Preston strike of 1836. This strike, according to the *Quarterly Review*, 1859, was by the spinners for an advance from 22s. 6d. per week to the Bolton rate of 26s. 6d. The strike lasted for thirteen weeks. "The masters carried the day and the men had to ask for work at prices much lower than those for which they struck," says one account,<sup>7</sup> but the *Quarterly Review* says that the masters offered three-fourths of the advance asked for, and Banks<sup>8</sup> says, that a 10 per cent. advance was gained, but soon withdrawn. The Factory Inspector's Report for 1842<sup>9</sup> gives the following account of spinners' wages in Preston, the wages being for spinners on small mules, viz., of 416 spindles:—

1841 .....	19s. 3d.		1837 .....	21s. 6d. after strike		1804 .....	35s.
------------	----------	--	------------	-----------------------	--	------------	------

Apparently some advance resulted from this strike, as the Report of the Committee on Trade Societies Strikes of the Social Science Association says, that "the spinners were compelled to succumb and to accept the terms which they had previously rejected." This report also states, that "among the results of this contest has been included the adoption of self-acting mules, which enabled the employers to dispense with a great many spinners."<sup>10</sup> This may have been so, but there were many hand-mules in operation in 1853, when the next great strike took place. Ward quotes the following estimate of the numbers involved in this strike and their earnings:—

660 spinners at 22s. 6d.		6,520 card room hands, weavers,
1,320 piecers at 5s. 6d.		overlookers, engineers, &c., at 9s.

<sup>7</sup> Ward, *Workmen and wages*, p. 30.

<sup>8</sup> Panks, *Cotton trade in Preston for the last sixty-seven years*.

<sup>9</sup> xiii of 1842.

<sup>10</sup> P. 209.

TABLE 24.—Average\* weekly wages paid to each class of operatives at Low Moor, Clitheroe, with production of yarn.

Year.	Card room workers.			Spinners.			Weekly output of yarn per head of spinners and card room hands.	Winding and warping.		Weaving.		Estimated average per weaver.†	
	Wages.	Persons.	Persons.	Mule.		Ring.		Wages.	Persons.	Looms per head.	Average per loom.		
				Wages.	Persons.	Wages.							Persons.
1833 .....	s. d.	161	s. d.	238	s. d.	—	lbs.	s. d.	50	{ 2 increasing from 2 to 3	s. d.	s. d.	
'40† .....	6 8½	126	8 5	236	—	—	39·6	6 2	56		{ 3 increasing from 3 to 3½	4 1½	8 3
'50 .....	5 10½	152	8 2	165	—	—	54	6 9½	67			{ 3 increasing from 3 to 3½	3 11½
'60 .....	5 11	84	7 1¼	116	—	—	71	6 3½	78	{ 3 increasing from 3 to 3½			3 10¼
'70 .....	10 11	102	12 10	94	—	—	160	8 9	80		{ 3 increasing from 3 to 3½		4 6½
'74 .....	13 4	105	19 —	106	—	—	200	11 8	85			{ 3 increasing from 3 to 3½	5 7½
'77 .....	13 9	104	18 6	104	—	—	205	12 3	91	{ 3 increasing from 3 to 3½			5 7½
'80 .....	14 4	104	18 11	95	—	—	194	11 2	91		{ 3 increasing from 3 to 3½		5 8
'83 .....	13 9½	104	17 9	83	10 6	10	215	11 2	91			{ 3 increasing from 3 to 3½	4 11
'86 .....	13 7	105	19 4	83	12 10½	24	239	13 10½	72	{ 3 increasing from 3 to 3½			4 11¼
'91 .....	13 6	89	18 1½	85	12 4	24	230	13 4	72		{ 3 increasing from 3 to 3½		4 10
1902 .....	16 11¼	90	21 1	85	12 11¼	28	270	12 11½	80			{ 3 increasing from 3 to 3½	5 2¼
'05§ .....	17 —¼	93	21 7	76	15 3	46	263	12 7½	84	{ 3 increasing from 3 to 3½			5 6½
'09   .....	18 6¼	93	22 6½	68	15 7	68	272	15 1	78		{ 3 increasing from 3 to 3½		6 3
	20 2		25 5	60	17 6¼	70	283	16 6¼	77			{ 3 increasing from 3 to 3½	6 8½

\* Six weeks were averaged in 1833; 26 in 1840, 1850 and 1860; and the whole year in the succeeding years, except 1905, for which the week ending 9th August was taken, and 1909, for which the week ending 4th August was taken.

† This column has been added.

‡ Self-actor mules introduced.

§ Week ending 9th August.

|| Week ending 4th August.

If this is correct, it indicates an average of 9s. 6d. per operative per week.

The Factory Inspector's Report of 1842, above quoted, states that piecers' wages, at 6s. 6d., had been fairly stationary, but that the spinners had suffered reductions of 10 per cent. in 1840, and 10 per cent. in 1841, and that weavers had also suffered a reduction of 10 per cent. in 1840. Banks<sup>11</sup> says, that in 1841-2 three reductions took place. These remarks relate to Preston, but the reductions of 1841-2 were pretty general throughout Lancashire.

Another great strike took place at Preston in 1853. In 1847 a general reduction of 10 per cent. had been made, and in 1853 Stockport and Blackburn obtained its return. At Preston, however, the spinners struck for it, but without success. During the progress of this strike, the masters issued a statement of great interest. From 1836 to 1853, they stated, the hours of labour had been reduced from 69 to 60, but wages had advanced by 20 per cent. A 10 per cent. reduction of wages had been made in 1847, but allowing for the reduction of hours, the cardroom wages had advanced by 22 per cent., the spinners by 16 per cent., and the weavers by 11½ per cent., making an advance of 14 per cent. in all. This, of course, meant that wages for the 60 hours in 1853 were practically equal to those of 1847 for 69 hours, before the 10 per cent. reduction.

During this strike a large number of hand-mules were converted into self-acting mules.

From Eccles Shorrocks's *History of the Formation of the Blackburn Association*, 1880, we learn that from 1850 to 1860 there was a very great extension of the trade in Blackburn, and that it led to a scarcity of workpeople. This is confirmed in the statement of Smiles,<sup>12</sup> that during the last few years (preceding 1861) wages in the cardroom at Darwen had advanced by 100 per cent. Edwin Chadwick, in his address on "Economy and Trade" to the Social Science Association, 1864, said that in the beginning of the century operatives in the cotton trade averaged 4s. 6d. per head, and that in Blackburn, in 1864, 25,865 operatives thrown out of work through the cotton famine had previously earned 11s. 5d. per head. Generally, he stated (meaning in the industry generally), the average was from 10s. 6d. to 11s. Power-loom weavers he put at 16s. to 17s., and the averages of men at 18s. 6d., women 10s., boys 7s., and girls 5s.

In 1872, the North and North-East Lancashire Employers' Association was formed.

In 1870-71, after the depression of 1868-69, when reductions were almost general, there took place a series of movements for advances in which the strippers and grinders were largely concerned. The requests for advances sometimes contained definite statements as to the wage then paid, and in the *Beehive* of 2nd July, 1870, we learn that the Preston strippers and grinders were only receiving 15s. or 16s., whereas in other districts they received 20s. to 22s. 6d.

<sup>11</sup> Banks, *Cotton trade in Preston for the last sixty-seven years*

<sup>12</sup> *Workmen's Earnings, Strikes and Savings*, 1862.

This is corroborative of the 15s. for these operatives in 1870 stated for Preston in Table 22 from Authority 20. An advance of 10 per cent. is said to have been granted as the result of this movement. In 1871 the Blackburn card-room males asked for an advance from 18s. to 20s., with the result that the masters agreed to advance some by 1s. and others by 2s.<sup>13</sup>

In 1878 practically the whole of Lancashire was involved in an unsuccessful strike by the weavers against a 10 per cent. reduction.

The Report of the Labour Department on Strikes and Lockouts of 1892 gives a table of weavers' earnings at the end of 1892 as stated by trade union branches. From this we learn that at Accrington the average was 5s. per loom, at Chorley, 18s., at Clitheroe, 5s. per loom, and that the Blackburn beamers and twistors averaged 20s. per week.

In replies to schedules of questions issued by the Labour Commission, 1891, we learn that the Blackburn weavers earned 16s. to 24s. per week, and that the Preston spinners averaged 31s. per week. Two employers at Blackburn stated the wages paid by them, one in too wide ranges to be of any value, but the other, who employed 600 males and 700 females, of whom 300 were young persons and 30 labourers, stated that they earned 950l. weekly, equal to an average of 14s. 7d. weekly. This was rather low for Blackburn at that date.

*Growth of number of looms per weaver.*

In the early days of power-loom weaving we hear almost immediately of four-loom weavers, and almost invariably of two-loom weavers. Contemporary writers, strange to say, never mention the one-loom weaver, yet in 1886 we find them surviving in Scotland, and I have met with repeated evidence that they were known in Lancashire in the "fifties" or later. In the table relating to Low Moor, Clitheroe (Table 24), it is stated that the weavers averaged 2 looms each in 1833, and increased from 2 to 3 by 1874, from 3 to 3½ by 1891, and to 3½ by 1902. In the Wage Census we get :—

	1886.			1906.		
	Weavers.	Looms.	Average.	Weavers.	Looms.	Average.
Preston .....	3,534	10,944	3·09	8,009	25,628	3·2
Blackburn .....	8,007	27,931	3·49	13,719	47,775	3·48
Darwen .....	3,304	11,270	3·41	—	—	—
Accrington .....	—	—	—	3,362	11,138	3·31
Totals .....	14,845	50,145	3·38	25,090	84,541	3·37

Practically no change has taken place, therefore, for the past twenty years in the average number of looms per weaver. In the absence of an extension of the system of six-loom weaving, which is

<sup>13</sup> *Beehive*, 15th July, 1871.



at present confined to Burnley and district (men and women), Rochdale (men), Bacup (men), and Blackburn (men), and is not very prevalent outside the Burnley district, practically no further increase in the average number of looms per weaver is to be anticipated. Previous to 1886, and more markedly previous to about 1874, however, the case was different, and the average appears to have been generally on the increase. If we assume that in 1833 the average was 2 per weaver, we are not entitled to further assume that the increase was gradual and uniform, except, perhaps, until the middle "fifties," as there were rapid expansions of the trade in 1859-61 and 1864-67, when the supply of new weavers did not equal the demands for the new looms. The question will come up for more detailed discussion later, when the general progress of wages is considered, but the average assumed for the weavers in Record C, Table 22, is based on the assumption that no increase took place after 1878.

Considerable difficulty arises when we attempt to allow for the weavers' "tenter" or assistant. Formerly, three-loom weavers generally, and four-loom weavers invariably, had assistants—lads or girls. To-day many four-loom weavers do not have assistants, and three-loom weavers have them but rarely. In the wage census of 1886 the wages are net after assistants are paid, but where we have only the average per loom we know that such assistants have to be paid out of the gross earnings. In the 1886 census we have the details as to weavers' assistants; in 1906 they are not given separately, but are classed with "other lads and boys" and "other girls."

In 1886 the details as to tenters were:—

	Preston.	Blackburn.	Darwen.
Weavers .....	3,534	8,007	3,304
Assistants —			
Girls, full time .....	328 at 5/7	174 at 5 4	44 at 5/3
„ half „ .....	623 „ 2/9	1,074 „ 2/8	457 „ 2/7
Boys, full „ .....	—	111 „ 5/3	24 „ 5/4
„ half „ .....	39 at 2/4	749 „ 2/8	228 „ 2/3
Average cost of tenting per } weaver .....	3d.	9½d.	8d.

The averages per weaver given in Table 22 in columns under Authority 17 and Authority C, require to have some allowance made for tenters, and the amount of this allowance is unknown, but probably does not exceed 3*d.* or 4*d.* per week.

One informant in the Preston district states that tenters from 1865 to about 1870 had 4*s.* 3*d.* and 4*s.* 6*d.* per week, and that between that time and the middle "seventies" they advanced to about 5*s.* There has been a gradual change since, some, but not general, reductions were made in 1878-79, when weavers' prices fell, and they have since advanced until to-day they get 6*s.* 2*d.* and 6*s.* 3*d.*, boys and girls being paid alike. This practically amounts to their having received the proceeds of one-loom's work when employed as full-timers, and half that amount when half-timers.



A study of the tabulations from the wage census, both of 1886 and 1906, reveals two distinct differences between Preston and the Blackburn districts in the very considerable variations in spinners' wages, and in the employment of six-loom weavers at Blackburn, both in 1886 and in 1906, but not at Preston or Accrington. The wages of spinners were lower at Blackburn by some shillings per week than at either of the other two districts. The reason for this is, that here a system of "joiner-minding" is in general vogue. It is known also in other districts, but it is not very largely prevalent. Generally, there are one spinner (or "minder"), one big piecer, and one little piecer, to each pair of mules. On the long mules of Oldham and Ashton there may frequently be more than two piecers to each minder. In the North and North-East Lancashire district the mules are shorter, and many are worked with one minder and one big piecer, or even, in a few cases, with one little piecer. In Blackburn, however, there are only 265 piecers to 634 minders, and in the Accrington district 191 piecers to 265 minders. This is brought about by two adults jointly minding one pair of mules, with or without the assistance of a little piecer. Instead, therefore, of a high average wage for the minder and of a low average for an equal number of big piecers, we get a mid-way wage for more spinners, and the big piecer is largely eliminated. In Preston the earnings in a number of cases would be: spinners 39s. 6d., big piecer 17s. 6d., little piecer, 9s.; total for three persons, 66s.; average per head, 22s. At Blackburn, on mules of similar size, the earnings would be: two joiner-minders at 29s. each, and one little piecer at 11s.; total for three persons, 69s.; average per head, 23s. Where the minders did not "join" the wage would be, roughly, minder 39s., big piecer 19s., little piecer, 11s. At Accrington both systems are in vogue, but the system of "joining" not being so prevalent, the average wage of the "minders" is higher than at Blackburn. The wages of piecers, however, are very similar—big piecers, men, getting 18s. 10d. in each case; big piecers, lads, getting 17s. 3d. at Blackburn and 17s. 1d. at Accrington, and little piecers 11s. at Blackburn and 10s. 6d. at Accrington.

The sequence of wages from 1833 to 1905, given for Clitheroe in Table 24, is so nearly complete that it is unfortunate that we do not know how many looms or weavers were employed at various years, nor how many loomers, dressers and other less numerous operatives and their wages. It is not certain, or even probable, that the number of weavers has varied in any direct proportion to the number either of carders, spinners or warpers, while their tenters will probably have decreased relatively throughout. I have applied to the firm for some further information, but have unfortunately failed to get it. Some form of estimate must be made. As a first step the average wage per head of all employed in the carding, spinning and winding and warping departments has varied as follows:—

1833.	1840.	1850.	1860.	1870.	1874.	1877.	1880.	1883.	1886.	1891.	1902.	1905.	1909
d.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.
90·6	88	78	133	177	180	180	170	177	178	201	200	215	236

In 1833, it does not matter much what reasonable number of weavers we assume. If we assume that weavers number one-third of the whole establishment, we get 7*s.* 9*d.* as our average wage, if that for each winder and warper there were 14 looms, that is, at 2 looms per weaver, 7 weavers, we get 7*s.* 11*d.* as our average wage. This difference is insignificant. In 1905, however, we get an average of 19*s.* 3*d.* if we assume the weavers to have been one-third of the whole mill, and 19*s.* 11*d.* if we assume them to have been related to winders and warpers in the proportion of 14 looms or 4 weavers per weaver and winder. In 1883 and 1905 these averages may fairly be regarded as the upper and lower limits. If the discrepancy was equal in proportionate amount in each year, it would not matter which we took, but the margin is 2 per cent. in 1833 and 3½ per cent. in 1905, a trifling difference only, but still leaving us in doubt. Perhaps, as the percentage advance is greater at Clitheroe than at any other centre, we should take the result which understates the advance rather than overstates it, and on the assumption, therefore, that weavers have formed one-third of the whole number employed at Clitheroe throughout, the average wage per head of all employed has been—

1833.	1840.	1850.	1860.	1870.	1874.	1877.	1880.	1883.	1886.	1891.	1902.	1905.	1909.
7/9	7/8	7/5	11/1	15/1	15/8	15/9	14/5	14/11	14/-	16/8	18/1	19/3	21/-

In 1906 the average wage at September, for those working full time, was 18*s.* 6*d.* at Preston, 21*s.* at Blackburn, and 19*s.* 9*d.* at Accrington. At the same date the averages for all workers, including those who worked more or less than full time were, Preston 18*s.* 5*d.*, Blackburn 20*s.* 10*d.*, and Accrington 19*s.* 5*d.* Taking the returns of monthly numbers paid wages and the total amounts paid on the last pay day of each month the averages were, Preston 18*s.* 5*d.*, Blackburn 21*s.*, and Accrington 19*s.* 9*d.* With these figures we may compare the averages compiled from the monthly returns in the *Labour Gazette*, thus:—

	Preston.		Blackburn, Accrington, and Darwen.			Preston.		Blackburn, Accrington, and Darwen.	
	<i>s.</i>	<i>d.</i>	<i>s.</i>	<i>d.</i>		<i>s.</i>	<i>d.</i>	<i>s.</i>	<i>d.</i>
1905...	17	6	19	9	1908. . . . .	16	7	18	11
'06...	18	1	20	—	'03 (Jan. } 16 Aug.) }	17	9	19	9
'07...	17	9	20	2½					

In view of the fact that we have so much unidentifiable material previous to 1886, it is fortunate that wages in many occupations in

that year are roughly about equal in each of the two chief centres, Preston and Blackburn, and also that in those years when we definitely know the source of our figures the course of wages in each district has been very much alike. The following numbers show this:—

	<i>Cirea,</i> 1840-42.	1860.	1870-71.	1882-83.	1886.	1906.
Blackburn .....	55	77	94	100	100	124 $\frac{2}{3}$
Preston .....	55	71	91	100	100	121 $\frac{1}{3}$

As the general changes in wages have been carried out by the same Associations at each place since 1872, and the chief occupation (weaving) has been carried on under the same standard price list since 1853, we are probably safe in interpolating between these dates on the assumption that both districts have varied together.

Combining the information in these tables we get the following as the index numbers showing the changes in average wages for cotton factory operatives at Preston, Blackburn and Clitheroe:—1833 to 1906. (1886 = 100):—

TABLE 25.

Year.	Preston.	Blackburn.	Clitheroe.	Year.	Preston.	Blackburn.	Clitheroe.
1833 ...	—	—	53	1874 ....	97	98	107
		(1842)		'77 ....	105	105	108
'40-41	55	55	52	'80 ....	96	96	98
'45 ....	56	56	—	'83 ....	100	100	102
'50 ....	54	56	51	'86 ....	100	100	100
'55 ....	56	60	—	'91 ....	110	110	114
'60 ....	71	77	76	'96 ....	109	113	—
'64 ....	71	73	—	1900 ....	111	119	—
'66 ....	85	87	—	'02 ....	—	—	123
'70 ....	—	—	103	'05 ....	—	—	131
'71 ...	91	94	—	'06 ....	121	125	—

*Burnley and district.*

This district is the home of coloured goods, fast running looms, and a high average number of looms per weaver. The average wage per operative, 23s. 10d., is 2s. 10d. per week higher than in any other textile district in the kingdom, except the Nottingham and Derby lace districts. The average of all employed is exactly the average of the women, 23s. 10d., so that the high average does not depend on a large number of men. We have little information relating to the history of wages at Burnley, however, and cannot form any index numbers for earlier than 1886. The tabulation of such information as we have is given in Table 26. In 1892 the average wage per weaver at Colne was said to have been 22s. to 23s., and at Nelson 18s. per four-loom weaver. At Padiham, in that year, an employer reported to the Labour Commission that the average per head of his 630 employees was 18s., and Mr. David Holmes, on behalf of the operatives, estimated the average at 5s. per loom, and 22s. per weaver after paying assistants, while Mr. Rawlinson, the employers' secretary, estimated the average per loom

TABLE 26.—*Burnley and district. Average earnings of cotton operatives for an ordinary week's work, 1882-1906.*

Authority .....	1882.	1886.		1891-93.		1891.	1893.	1899.	1906.	
	—	Number.	Wage.	Number.	Wage.	57.	—	57.	Number.	Wage.
Winders .....	<i>s. d.</i>		<i>s. d.</i>		<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>		<i>s. d.</i>
Warpers .....	12 6, 20/-	559	15 3	16	18 —	18 —	—	18 6	1,241	18 5
Twisters-in .....	17 6, 22 6	35	21 7	—	—	—	—	—	97	25 10
Drawers-in .....	—	113	21 10	—	—	21/-, 35/-	—	24/-, 35/-	322	26 1
Weavers, 2 looms .....	—	23	28 4	5	16/-, 35/-	25/-, 35/-	—	20/-, 35/-	148	33 7
“ 3 “ .....	—	316	10 8	—	—	10 6	—	10 9	1,036	12 5
“ 4 “ .....	15 6, 18 7/-	417	15 7	—	—	15 9	—	16 2	1,429	19 —
“ 5 “ .....	20/-, 24/-	2,743	21 5	—	24 —	21 —	—	21 6	10,705	25 6
“ 6 “ .....	30/-, 36/-	557	25 8	—	26 6	—	21 —	—	1,505	33 6
Assistants .....	3 6*	754*	3/-, 6 4	—	6 6	—	—	—	—	—
Average per loom .....	—	—	5 1	—	5 6	—	—	—	—	6 2 8
“ weaver .....	—	4,033	20 7	180†	—	—	—	—	14,675	24 9
Weaving overlookers .....	—	89	36 3	—	—	—	—	—	636	43 11
Dressers, sizers .....	28/-, 42/-	89	33 7	6	38 —	40 —	—	42 —	—	—
Beamers .....	30/-, 42/-	53	24 7	2	40 —	40 —	—	48 —	107	44 3
Cloth lookers .....	17 6, 22 6	55	24 1	6	33 —	—	—	—	—	—
Labourers .....	—	12	19 8	4	33 —	—	—	—	—	—
Lads .....	—	—	—	4	18 —	—	—	—	120	21 10
Average of all .....	—	7,223	17 10	—	—	—	—	—	21,080	23 10

\* Half-timers.

† With tenters.



at 5s. 3*d.*, and per operative, after paying assistants, 2*s.* Shultze-Gaevernitz estimated the average per loom in 1891 at 5*s.*, and the weekly wage 22*s.* to 27*s.*

The average per head of all employed in 1886 was 17*s.* 10*d.*, in 1906, 23*s.* 10*d.* for those who worked only full time, and 23*s.* 8*d.* for those who worked more or less than full time. From the *Labour Gazette* we find that the averages per head have been: 1905, 22*s.* 2½*d.*; 1906, 23*s.*; 1907, 23*s.* 5*d.*; 1908, 19*s.* 5*d.*; 1909, 22*s.* (January to August). From the whole of our information we deduce the following as index numbers representing the course of average wages in the Burnley district, 1886-1909 (1886 = 100).

1886 ..... 100 | 1891 ..... 111 | 1899 ..... 118 | 1906 ..... 133

*Rochdale, Bury, Bacup, Todmorden, &c.*

We have to combine these districts because the census of 1886 and of 1906 are not comparable owing to Bury and Rochdale being given separately in 1886 and together in 1906, and to the inclusion of Todmorden with Bacup in 1886 and with Rochdale and Bury in 1906.

The effect in 1886 of this amalgamation is shown in the following table:—

	Lads and boys.						Girls.			All.				
	Men.		Full time.		Half-time.		Women.		Full time.		Half-time.			
	<i>s.</i>	<i>d.</i>	<i>s.</i>	<i>d.</i>	<i>s.</i>	<i>d.</i>	<i>s.</i>	<i>d.</i>	<i>s.</i>		<i>d.</i>	<i>s.</i>	<i>d.</i>	
Rochdale, &c. ....	23	5	11	4	3	1	13	11	9	8	3	1	14	8
Bury, &c. ....	24	2	10	5	2	6	15	10	8	9	2	5	12	11
Bacup, &c. ....	21	—	11	1	2	11	16	—	10	8	2	8	15	6
All above distric's .....	22	4	10	11	2	11	15	4	9	8	2	8	14	6

The average of all employed is thus found to be 14*s.* 6*d.* in the combined districts, varying from 12*s.* 11*d.* at Bury to 15*s.* 6*d.* at Bacup.

In 1906 the averages are extraordinary close, thus:—

	Men.		Lads and boys.			Women.	Girls.			All.				
			Full time		Half-time		Full time		Half-time					
	<i>s.</i>	<i>d.</i>	<i>s.</i>	<i>d.</i>	<i>s.</i>	<i>d.</i>	<i>s.</i>	<i>d.</i>	<i>s.</i>	<i>d.</i>				
Bacup ...	26	—	12	9	3	10	18	11	12	9	3	8	19	5
Rochdale.....	27	9	12	6	3	10	18	11	12	7	3	9	19	6
Combined .....	27	3	12	8	3	10	18	11	12	7	3	9	19	6

but the various occupations show greater divergences. Spinners at Rochdale average 4*s.* 1*d.* and at Bacup only 3*s.* 9*d.*, a difference partly due to “joiner-minding,” and more due, apparently, to much shorter mules, as these are practically the normal proportions of minders and piecers at Rochdale, but at Bury 190 spinners to 133



big and only 58 little piecers, or only one piecer per spinner instead of two. Women weavers again earn 20s. 4d. at Bacup and 18s. 8d. at Rochdale, while drawing-frame tenters earn only 18s. 1d. at Bacup against 21s. 9d. at Rochdale, slubbers 17s. 1d. against 21s. 2d., intermediates 17s. 11d. against 19s. 11d., and rovers 16s. 9d. against 19s. 2d. We learn that in 1833 at a mill in Bury the average of 557 persons was 9s. 1'69d. per head, and of the children under fourteen years 3s. 3'63d. per head. In 1841 we are told that the average of all in a mill at Bury was 9s. 6d. At Rochdale, in 1844, according to John Bright,<sup>14</sup> the average at his mill was 10s. 1d. per head of all employed. At Bacup, the average wages of weavers was stated in the report on strikes and lockouts of 1892 as 18s. to 19s. per week; at Bury as 4s. 6d. to 5s. 3d. per loom; and at Heywood as 22s. per week.

TABLE 27.—*Bury, Bacup, Rochdale and district. Average earnings for an ordinary week's work for cotton operatives, 1833-1906.*

Date .....	1836.	1836.	1836.	1836.	1839.	1841.	1841.	1841.	1841.
District .....	Bury.	Bury.	Bury.	Bury.	Rochdale.	Bury.	Bury.	Bury.	Bury.
Authority .....	26a.	26b.	26c.	26d.	†	26a.	26b.	26c.	26d.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	d.	s. d.
Openers and mixers .....	—	—	—	—	—	—	—	—	—
Scutchers, M. ....	—	—	—	—	—	—	—	—	—
"    W. ....	—	—	—	—	—	—	—	—	—
Strippers and grinders ..	10 6	—	15 —	—	—	10 —	—	12 —	—
Carding overlookers .....	—	—	—	—	—	—	—	—	—
Lap carriers .....	—	—	—	—	—	—	—	—	—
Drawing tenters .....	—	—	—	—	7 6	—	—	—	—
Slubbing tenters .....	—	—	—	—	8 —	—	—	—	—
Intermediate tenters .....	—	—	—	—	—	—	—	—	—
Roving tenters .....	—	—	—	—	8 —	—	—	—	—
All tenters .....	6'6, 8/-	6 6	7'8, 8/6	6/-, 7/6	—	6 -, 7 6	6 —	7 -, 8 -	6 -, 7/-
Back tenters .....	—	—	—	—	—	—	—	—	—
Spinning overlookers .....	—	—	—	—	—	—	—	—	—
Hand-mule spinners.....	27 —	15 —	27 —	25 —	—	26 —	18 —	24 —	15', 20/-
S.A. minders .....	—	—	—	—	—	—	—	—	—
Big piecers .....	9 —	—	8 6	8 6	—	8 —	—	8 —	8 —
Little piecers .....	6 6	5 —	6 6	5 6	—	5 —	4 6	6 —	5 —
All piecers .....	—	—	—	—	—	—	—	—	—
Scavengers .....	4 6	2 4*	—	2 4*	—	5 —	2 9*	—	2 1*
Throstle overlookers.....	—	—	—	—	—	—	—	—	—
"    spinners .....	—	—	—	—	8 —	—	—	—	—
"    doffers .....	—	—	—	—	5 6	—	—	—	—
Reeders .....	—	—	10'6, 11/6	9 -, 11	—	—	—	10 -, 11 -	9 -, 11/-
Winders .....	—	—	—	—	—	—	—	—	—
Warpers, W. ....	—	—	—	—	—	—	—	—	—
Ball warpers .....	—	—	—	—	—	—	—	—	—
Beamers .....	—	—	—	—	—	—	—	—	—
Twisters.....	—	—	—	—	—	—	—	—	—
Drawers-in .....	—	—	—	—	—	—	—	—	—
Twisters in .....	—	—	—	—	—	—	—	—	—
Sizers, &c. ....	—	—	—	—	—	—	—	—	—
Weaving overlookers .....	—	—	—	—	—	—	—	—	—
Weavers, 2 looms .....	—	—	—	—	—	—	—	—	—
"    3 " .....	—	—	—	—	—	—	—	—	—
"    4 " .....	—	—	—	—	—	—	—	—	—
"    6 " .....	—	—	—	—	—	—	—	—	—
Weavers' average .....	8 3	—	10'6, 15' -	9' -, 10' -	—	9 —	—	10' -, 15' -	9 —
Average per loom .....	—	—	—	—	—	—	—	—	—
Looms per weaver .....	—	—	—	—	—	—	—	—	—
Weavers' assistants .....	—	—	—	—	—	—	—	—	—
Reachers in .....	—	—	—	—	—	—	—	—	—
Blacksmiths & mechanics	—	—	—	—	22 —	—	—	—	—
Labourers.....	—	—	—	—	—	—	—	—	—
Average of all.....	—	—	—	—	—	—	—	—	—

\* Half-timers.

† Statement by John Bright.

<sup>14</sup> Speech in the House of Commons, 15th March, 1844.

TABLE 27 *Contd.*—Bury, Bacup, Rochdale and district, 1833-1906—*Contd.*

Date .....	1871.	1871.	1881.	1886.		1886.		1886.	
District.....	Rochdale.	Bury.	Rochdale.	Rochdale.		Bacup.		Bury.	
Authority .....	9	9	†	1		1		1	
	s. d.	s. d.	s. d.	No.	Wage. s. d.	No.	Wage. s. d.	No.	Wage. s. d.
Openers and mixers.....	—	12 —	—	32	16 8	34	15 2	27	17 6
Scutchers, M. ....	—	18 —	—	72	17 11	67	17 9	57	18 1
"    W. ....	—	12 —	—	2	11 5	—	—	13	11 7
Strippers and grinders ...	16 —	18 —	—	133	18 9	98	17 3	105	18 8
Carding overlookers.....	35 —	20/-, 35/-	—	44	29 1	50	25 7	42	28 7
Lap carriers.....	—	10 —	—	7	15 10	6	15 2	12	15 10
Drawing tenters .....	—	13 —	15 —	153	13 11	131	13 6	112	13 11
Stubbing tenters .....	16 —	13 —	14 —	516	14 3	374	14 —	397	14 10
Intermediate tenters .....	—	—	—						
Roving tenters .....	14 —	13 —	14 —						
All tenters .....	—	—	—	669	14 2	505	13 11	509	14 7
Back tenters .....	—	7 —	—	11, 103	3 5, * 8 5	26	8 1	90	8 5
Spinning overlookers .....	30 —	32 —	—	12	31 9	17	29 5	17	35 8
Hand-mule spinners.....	—	—	—	—	—	—	—	—	—
S.A. minders .....	—	28 —	—	194	31 3	170	24 8	223	29 8
Big piecers .....	—	12 —	—	183	14 11	136	15 8	190	14 —
Little piecers .....	—	7 —	—	131	9 11	23	10 8	134	9 3
All piecers .....	—	—	—	314	12 10	159	15 —	324	12 —
Scavengers .....	—	5 6	—	15, 8	4 2*, 8/11	12, 10	2/11*, 6/4	8, 5	2/11*, 6/-
Throstle overlookers .....	—	26 —	—	50	22 8	34	23 9	24	23 10
"    spinners .....	11 6	12 —	13 —	443	12 1	312	11 3	211	12 8
"    doffers .....	9 —	6 6	9 6	108, 33	3 2*, 6/11	201, 223	2/7*, 7/7	27, 181	2 6*, 7/-
Reelers .....	—	—	—	196	12 —	—	—	54	12 3
Winders .....	—	12 —	—	461	12 1	396	13 10	355	12 9
Warpers, W. ....	—	—	—	35	16 —	16	16 10	72	17 11
Ball warpers .....	22 —	30 —	—	68	33 5	35	29 4	21	28 —
Beamers .....	—	12/-, 22/-	—	11	23 —	38	22 10	—	—
Twiners .....	—	28 —	—	—	—	—	—	—	—
Drawers-in .....	—	15/-, 24/-	—	20	24 8	42	23 —	20	23 10
Twisters-in .....	—	{ 10/-, 15/-, 24/- }	—	46	17 9	121	17 5	57	18 10
Sizers, &c. ....	—	26 —	—	14	31 —	35	32 7	29	33 7
Weaving overlookers .....	—	30 —	—	48	30 7	109	33 4	71	33 2
Weavers, 2 looms .....	—	13 —	—	140	9 9	275	9 7	395	9 8
"    3 " .....	—	—	—	97	14 11	1,422	14 8	624	14 7
"    4 " .....	—	—	—	440	19 4	2,164	19 5	1,152	18 11
"    6 " .....	—	—	—	31	22 10	197	25 2	39	23 9
Weavers' average .....	—	—	—	1,589	15 10	4,958	17 4	2,210	16 2
Average per loom .....	—	—	—	—	4 10 5	—	4 9 6	—	4 8 9
Looms per weaver.....	—	—	—	—	3 2	—	3 6	—	3 4
Weavers' assistants .....	—	5 —	—	54*	2 10*	443*, 56	2/10*, 6/1	447*, 36	2 5*, 5/-
Reachers-in .....	—	5 —	—	8*	2 6*	35*, 12	2/7*, 6/4	36*, 12	2 7*, 6/-
Blacksmiths & mechanics	—	—	34 —	18	30 1	43	28 2	31	30 1
Labourers .....	—	18 —	—	14	18 10	20	18 4	12	19 5
Average of all.....	—	—	—	5,663	14 8	8,201	15 6	6,030	12 11

\* Half-timers.

† Statement by John Bright.



averages are 19s. at Rochdale, 19s. 2d. at Bacup, and 19s. 1d. over the whole district. The similar averages from the monthly returns in the *Labour Gazette* have been :—

	s.	d.		s.	d.		s.	d.
1905 .....	18	5	1907 ....	18	2	1909 ....	18	4
'06 .....	19	—	'08 .....	17	11	(to August)		

We cannot procure reliable index numbers from this material for any except isolated years. The following are the best we can do, and the gaps between the years stated are very long :—

TABLE 28.—*Index numbers, showing the percentage changes in wages in the Rochdale, &c., district.*

1833 .....	63	1844 .....	69	1885 .....	100
'36 .....	66	'71 .....	88	1906 .....	134
'41 .....	63				

## SECTION IV.

*Yorkshire.*

The West Riding of Yorkshire has had a more or less flourishing cotton industry from the commencement of the factory system, and the industry thrives to-day at Halifax, Brighouse, Slaithwaite, and elsewhere. I have not, however, been able to trace many references to wages in this district. Such particulars as I have been able to discover are given in Table 28, but they have little value, on account of their incompleteness. We cannot make any estimates of the course of wages, although the particulars leave no doubt that a very considerable advance has taken place.

*Miscellaneous Lancashire centres.*

Although we are unable to make any further use of them, there are certain particulars relating to different places in Lancashire which it seems desirable, for the sake of completeness and for future reference, to place on record. They are given in Table 29. The table calls for no comment, except to add that :

(a.) The figures relate to Lancaster, and are from the same authority as the rest of the statements in this column.

(b.) In 1840 the spinners averaged 24s. 9d.

(c.) At other mills the wages were 6s. 9d. and 7s.

(d.) The earnings are for short wheels, and were subject to a deduction of 2s. 6d. or 3s. for gas during six months of the year.

(e.) The earnings are for large wheels, and were subject to a similar deduction for gas as (d).

(f.) From Report of Factory Inspector, xxii of 1864.



TABLE 28.—YORKSHIRE. Average earnings of cotton operatives at various periods. 1837-1907.

District.....	Skipton.	Skipton.	Craven.	Huddersfield.	Halifax.	Yorkshire.	Brighouse.
Year .....	1837.	1841.	1841.	1849.	1846.	1906.	1907.
Authority .....	26.	26.	26.	3.	1.	1.	17.
	s. d.	s. d.	s. d.	s. d.	Number.	Wages.	s. d.
Mixers .....	—	—	—	—	11	s. 18 4	21 2
Scutchers, M. ....	—	—	—	12 —	53	17 11	21 8
Strippers and grinders ..	10 —	9/-, 13/-	—	12 —	76	18 10	23 1
Carding overlookers .....	19 —	21/-, 27/-	—	12 —	40	29 1	35 3
Drawing tenters .....	6 3	6 6	—	9 —	109	12 10	15 4
Bobbin and fly .....	—	—	—	7 6	—	—	—
Slubbing tenters .....	6 3	6 6	—	—	—	—	—
Intermediate tenters .....	6 3	6 6	—	—	330	13 2	16 5
Roving tenters .....	—	—	—	—	—	—	—
Tenters average .....	—	—	—	—	439	13 1	15 1*
Little tenters .....	—	—	—	—	20	2 11½†	—
Spinning overlookers .....	—	—	—	—	62	7 3	—
S.A. minders, M. ....	22 —	26 — { 17/-, 20/- 14/-, 16/-	—	30 —	14	38 8	34 4
W. ....	—	—	—	—	364	28 6	32 5
Big piecers .....	6 —	6 —	4 —	—	—	—	—
Little piecers .....	2 —	2 —	2 9	—	380	12 9	15 7
All piecers .....	—	—	—	—	113	2 11†	—
Twiners .....	—	—	—	—	223	8 7	6½, 7/-
Twinner piecers .....	—	—	—	26 —	716	9 11	—
—	—	—	—	12/-, 9/-	243	30 3	36 —
—	—	—	—	—	179	2 11†	—
—	—	—	—	—	673	11 3	16½, 7/-

\* Including 60 frame tenters unclassified at 12s. 11d.

† Half-timers.

TABLE 28 *Contd.*—YORKSHIRE. *Average earnings of cotton operatives at various periods, 1837-1907.*

District.....	Skipton.	Skipton.	Craven.	Huddersfield.	Ilalifax.	Yorkshire.	Brightonse.
Year .....	1837.	1841.	1841.	1849.	1886.	1906.	1907.
Authority.....	26.	26.	26.	3.	1.	1.	17.
	s. d.	s. d.	s. d.	s. d.	Number.	Wages.	s. d.
Throstle overlookers .....	—	—	—	—	2	29 —	—
" spinners .....	—	—	—	—	—	—	—
Reelers .....	—	—	—	9 —	425	11 4	15 3
Winders .....	—	—	—	14/5, 7/6	211	12 6	13 3
Doublers .....	—	—	—	—	—	—	14 6
Warpers, W. ....	—	—	—	—	42	15 10	12 9
" M. ....	—	—	—	17 —	32	29 3	18 4
Twisters-in .....	—	—	—	—	—	—	—
Weaving overlookers .....	—	—	—	—	14	25 8	23 11
Weavers, 2 looms .....	—	—	—	—	—	—	—
" 3 " .....	—	—	—	—	—	—	—
" 4 " .....	—	—	—	—	—	—	—
" 6 " .....	—	—	—	—	—	—	—
Average per weaver .....	—	—	—	—	—	—	—
Looms per weaver .....	—	—	—	—	—	—	—
Average per loom .....	—	—	—	—	—	—	—
Mechanics.....	—	—	—	—	—	—	—
Enginemmen .....	—	—	—	—	—	—	—
Joiners .....	—	—	—	—	—	—	—
Labourers .....	—	—	—	—	—	—	—
Stokers and oilers .....	—	—	—	—	—	—	—
Average of all .....	—	—	8 —	—	3,992	14 6	—
							18 11

\* Including fustian weavers. 3 looms, 5s.; 15s. 8d.; 4 looms, 37, 19s. 7d. and 201, 22s. 3d.

TABLE 29.—*Miscellaneous Lancashire Centres. Average earnings of cotton operatives for an ordinary week's work. 1833-1906.*

District.....	Warrington. ton.	A country town.	Wigan. Wigan.	Wigan. Wigan.	?	?	Warrington. ton.	Caliste.		Miscellaneous, Lancashire.		"Other" towns.	
								1886.		1886.		1906.	
								Number.	Wage.	Number.	Wage.	Number.	Wage.
Year .....	1833.	1841.	1842.	1842.	1861.	1863.	1886.	1.		1.		2.	
Authority .....	4 and 10.	26	54	54	(f.)	(f.)	3.	Number.	Wage.	Number.	Wage.	Number.	Wage.
Mixers .....	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.						
Seutchers, M.	15 -	15 -	15 -	15 -	10 6	10 6	18 8	6	15 3	21	16 9	—	—
"	7 1/2, 8/6	7 1/2, 8/6	7 1/2, 8/6	7 1/2, 8/6	—	—	8 -	5	19 5	34	19 7	—	—
Strippers and grinders .....	8 1/2, 9 -	8 1/2, 9 -	8 1/2, 9 -	8 1/2, 9 -	—	—	20 9	23	8 9	49	9 10	—	—
Lap and can tenters .....	10 1/2, 11 -	10 1/2, 11 -	10 1/2, 11 -	10 1/2, 11 -	—	—	12 6	27	18 11	123	19 5	41	24 -
Drawing tenters .....	6 1	6 1	6 1	6 1	—	—	13 -	20	7 10	46	8 8	—	—
Slabbing tenters .....	6 2	6 2	6 2	6 2	—	—	10 8	47	10 8	130	12 6	119	13 1
Intermediate tenters .....	5 10	5 10	5 10	5 10	—	—	13 -	113	12 4	577	14 -	68	15 4
All tenters .....	3 1/2, 5 -	3 1/2, 5 -	3 1/2, 5 -	3 1/2, 5 -	—	—	5 4, 6 8	160	11 10	727	13 8	33	14 5
Little tenters .....	20 - 25 -	20 - 25 -	20 - 25 -	20 - 25 -	—	—	35 1/2, 42 -	46	6 4	95	7 5	100	15 3
Carding overlookers .....	17 6	17 6	17 6	17 6	25 -	25 -	49 -	11	31 6	54	31 3	26	32 5
Spinning overlookers .....	28 10	28 10	28 10	28 10	31 -	31 -	31 9	7	32 10	20	37 5	11	36 3
S.A. minders .....	24 -	24 -	24 -	24 -	20 -	20 -	31 9	93	26 9	94	33 3	73	40 -
Piecers, 1st .....	5 -	5 -	5 -	5 -	13 -	13 -	8 3	—	—	358	13 -	—	—
" 2nd .....	2 6	2 6	2 6	2 6	7 -	7 -	6 -	—	—	261	8 4	—	—
" 3rd .....	—	—	—	—	—	—	30 1/2, 15 1/2	85	10 10	619	11 -	—	—
All piecers .....	—	—	—	—	7 -	7 -	22 6	3	25 3	12	24 9	—	—
Throstle overlookers .....	4 8	4 8	4 8	4 8	—	—	9 1/2, 11/6	43	11 6	166	10 3	311	11 5
" spinners .....	—	—	—	—	—	—	7 8	7	2 4*	—	6 1	—	—
" doffers .....	—	—	—	—	—	—	7 8	20	4 10	32	6 1	—	—

\* Half-timers.

TABLE 29 *Contd.*—Miscellaneous Lancashire Centres. Average earnings of cotton operatives for an ordinary week's work. 1833-1906.

District .....	Warrington. ton.	A country town.	Wigan. 1841.	Wigan. 1841.	Wigan. 1842.	?	?	Warrington. ton.	Carlisle.	Miscellaneous, Lancashire.	"Other" towns.		
Year .....	1833.	1841.	1841.	1841.	1842.	1841.	1843.	1843.	1846.	1886.	1906.		
Authority .....	1 and 10.	26	26	26	54	(f.)	(f.)	3	1.	1.	2.		
Reelers .....	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	Number.	Wage.	s. d.		
Winders .....	—	—	—	—	—	—	—	11 6, 12 5, 14	}	369	12 —	8 11	
Warpers, W. ....	10 11	—	—	—	—	—	—	14 —		191	1,213	11 9	12 11
Warpers, M. ....	—	—	—	—	—	—	—	30 —		26	115	16 11	19 7
Drawers in .....	—	—	—	—	—	—	—	12 —		5	20	29 9	—
Twisters in .....	—	—	—	—	—	—	—	10 —		17	133	20 —	—
Sizers and dressers .....	30 9	—	—	—	—	—	—	36 —	10	44	32 3	—	
Radiators in. Full timers ..	—	—	—	—	—	—	—	3 6	20	32	5 2	—	
Doers .....	—	—	—	—	—	—	—	11 —	35	35	2 10	—	
Doubliers .....	22 7	—	—	28 3	—	21 6	—	38 —	26	147	32 9	11 8	
Weaving overlookers .....	—	—	—	—	—	—	—	—	—	18	5 6	—	
Weavers, 1 loom .....	—	—	7 —	—	—	7 11	—	11 6	306	1,232	10 7	11 8	
" 2 " .....	—	—	—	—	—	—	—	16 6	277	969	15 10	16 3	
" 3 " .....	—	—	—	—	—	—	—	19 —	320	1,490	18 8	17 9	
" 4 " .....	—	—	10 11	—	—	11 10	—	—	—	75	25 —	—	
" 6 " .....	—	—	—	—	—	—	—	—	903	4,189	14 10	15 1	
" average .....	11 10	—	—	—	—	—	—	—	—	—	5 0 3	3 00	
Average per loom .....	—	—	—	—	—	—	—	—	—	—	—	—	
Looms per weaver .....	—	—	—	—	—	—	—	—	—	—	—	—	
Weavers' assistants, Full timers .....	—	—	—	—	—	—	—	—	75	463	4 6	—	
Weavers' assistants, Half timers .....	—	—	—	—	—	—	—	3 6	226	616	2 7	—	
Mechanics .....	—	—	—	—	—	—	—	—	24	54	30 —	33 11	
Laborers .....	—	—	—	—	—	—	16 to 20	—	—	31	17 4	19 9	
Average of all .....	9 1	—	—	—	—	—	—	—	2,440	11,558	12 7	14 1	

*Glasgow and other Scottish places.*

The history of wages in the Scottish cotton trade is, as is the history of the trade itself, one entirely unlike that of its Lancashire rival. In Lancashire the trade has grown from decade to decade, in Scotland it has so dwindled that, whereas 100 years ago probably one-seventh of the cotton product of the kingdom was of Scottish manufacture, to-day the amount produced in Scotland is almost insignificant in proportion to the rest of the United Kingdom.

In 1835 the Factory Inspector's Returns of the numbers employed in cotton factories show 32,580 operatives in Scottish factories, compared with 182,243 in the factories of England and Wales. In 1901 there were only 26,297 in the Scottish factories, and 494,678 in those of England and Wales. Various investigators have drawn attention to the decline of the Scottish cotton industry, and have discussed its causes. In doing so they have discussed questions of wages, and have thereby provided much material for an account of the course of wages during the century. This material is tabulated in Table 30.

A glance at this table will reveal various features not met with in the tables relating to English centres. The list of operatives is longer, various occupations drop out as time goes on, and women are employed in several branches in Scotland when men are employed in Lancashire. The great changes which have been made add considerably to the difficulty of constructing index-numbers, and we cannot be so sure of our results as in the case of places where the main structure of the industry has not undergone the remarkable changes which the almost entire disappearance of mule spinning, the employment of women as spinners, &c., have brought about.



TABLE 30.—SCOTLAND. *Average earnings of cotton operatives for an ordinary week's work. 1810-1906.*

Year .....	1810-25.	1824.	1825-30.	1830-35.	1831.	1833.	1838.
Place .....	Glasgow.	Glasgow.	Glasgow.	Glasgow.	Glasgow.	Lanark.	Glasgow.
Authority.....	**	42.	**	**	3.	5.	24.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Scutchers overlookers .....	—	—	—	—	—	—	—
Carding masters .....	—	—	17 9	16 10	—	—	—
Pickers .....	—	—	—	—	—	—	—
Mixers .....	—	—	—	—	—	—	7 -
Scutchers .....	—	—	—	—	—	—	—
Strippers .....	—	—	—	—	—	—	14 -
Grinders .....	—	—	—	—	—	—	—
Drawing frame tenters .....	—	—	—	—	—	—	6 6
Shubbing frame tenters .....	—	—	—	—	—	—	6 6
Intermediate frame tenters .....	—	—	—	—	—	—	—
Roving frame tenters .....	—	—	—	—	—	—	7 -
All tenters, average .....	—	—	—	—	7/-, 8/-	—	—
Little tenters .....	—	—	—	—	—	—	4 6
Stretchers .....	—	8/-, 10/-	—	—	—	—	8 6
Spinning overlookers ..	—	—	—	—	—	—	—
Self-acting overlookers .....	—	—	—	—	—	—	—
Spinners, 1st class.....	—	—	—	—	—	—	—
" 2nd ..	—	—	—	—	27 -	—	—
" 3rd ..	—	—	—	—	21/-, 27/-	—	—
" women ..	—	—	—	—	—	—	—
" average.....	—	23/- to 25/-	20 2	26 1	12/-, 15/-	7/-, 9/- (4)	—
Piecers, 1st class .....	—	—	—	—	7/-, 8/-	16/-, 20/-	20/-, 29/-
" 2nd ..	—	—	—	—	4/-, 5/-	—	6 -
" 3rd ..	—	—	—	—	2/-, 2/6	—	3 6
" average .....	—	—	—	—	—	—	2 -
Throstle spinners. W.....	—	—	—	—	—	—	—
" " G.....	—	—	—	—	—	—	7 -
" " Average .....	—	—	—	—	—	—	—
Reelers overlookers .....	—	—	—	—	—	—	—
" ..	—	—	—	—	7/-, 8/-	—	6 6
Winders .....	—	—	—	—	7/-, 8/-	—	—
Warpers. M. ....	—	—	—	—	—	—	—
" W. ....	—	—	—	—	—	—	—
Hand loom warpers .....	—	—	—	—	(1)	—	—
Twisters in .....	—	—	—	—	—	—	—
Power loom overlookers .....	—	—	—	—	—	—	—
" weavers, 1 loom .....	—	—	—	—	—	—	—
" " 2 looms .....	—	—	—	—	—	—	—
" " 3 " .....	—	—	—	—	—	—	—
" " 4 " .....	—	—	—	—	—	—	—
" " average .....	—	7/-, 10/-	—	—	—	—	—
Tappers.....	—	—	—	14 -	—	—	—
Calenderers .....	15 -	—	15 -	15 -	15/- (1)	—	—
Sizers, dressers, &c. ....	—	—	—	—	—	—	—
Card minders .....	—	—	—	—	—	—	—
Foremen mechanics.....	—	—	—	—	—	—	—
Engineers.....	—	—	—	—	—	—	—
Mechanics and millwrights .....	—	—	—	—	—	—	—
Blacksmiths .....	—	—	—	—	—	—	—
Joiners .....	—	—	—	—	—	—	—
Firemen .....	—	—	—	—	—	—	—
Labourers.....	—	—	—	—	—	—	—
Average of all .....	—	—	—	—	—	—	—

TABLE 30 *Contd.*—SCOTLAND. *Average earnings of cotton operatives.*

Year .....	1838.	1841.	1841.	1851.	1856.	1856.	1856.
Place .....	Glasgow.	—	Glasgow.	Glasgow.	Glasgow.	?	?
Authority .....	**	—	56.	56.	56.	200.	205.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Scutchers overlookers .....	—	—	—	—	—	—	15 -
Carding masters .....	17 6	—	—	—	—	—	20 -
Pickers .....	—	—	—	—	—	5 7	—
Mixers .....	—	—	—	—	—	—	12 -
Scutchers .....	—	—	—	—	—	—	—
Strippers .....	—	—	—	—	—	—	10 6
Grinders .....	—	—	—	—	—	9 6	10 6
Drawing frame tenters .....	—	—	—	—	—	5 5	—
Slubbing frame tenters .....	—	—	—	—	—	—	—
Intermediate frame tenters ...	—	—	—	—	—	—	—
Roving frame tenters .....	—	—	—	—	—	—	—
All tenters, average .....	—	—	—	—	—	—	5 11
Little tenters .....	—	—	—	—	—	—	—
Stretchers .....	—	—	—	—	—	—	—
Spinning overlookers .....	—	—	—	—	—	—	—
Self-acting overlookers .....	—	—	—	—	—	—	24 -
Spinners, 1st class .....	—	—	—	—	—	—	—
" 2nd " .....	—	—	—	—	—	—	—
" 3rd " .....	—	—	—	—	—	—	—
" women .....	—	—	—	—	—	—	—
" average .....	23 10	23/-, 30/-	21 -	21/-, 25/-	20/-, 35/-	6 7	6 9
Piecers, 1st class .....	—	—	—	—	—	—	—
" 2nd " .....	—	4 -	—	—	—	—	—
" 3rd " .....	—	2 -	—	—	—	—	—
" average .....	—	—	—	—	—	—	4 -
Throstle spinners. W. ....	—	—	—	—	—	—	—
" " G. ....	—	—	—	—	—	—	—
" " Average ...	—	—	—	—	—	3 7	—
Reelers overlookers .....	—	—	—	—	—	—	15 6
" " " .....	—	—	—	—	—	—	4 9
Winders .....	—	—	7 6	8 -	9 -	—	—
Warpers. M. ....	—	—	—	12 -	17 -	—	—
" W. ....	9 6 (3)	—	—	—	—	—	—
Hand loom warpers .....	—	—	—	—	—	—	—
Twisters-in .....	8 4	—	—	9 -	12 -	—	—
Power loom overlookers .....	—	—	—	30 -	40 -	16 9	—
" weavers, 1 loom .....	—	—	—	—	—	—	—
" " 2 looms .....	—	—	—	—	—	—	—
" " 3 " .....	—	—	—	—	—	—	—
" " 4 " .....	—	—	—	—	—	—	—
" " average .....	—	—	7 -	7/3, 8/9	8/3, 10/9	6 9	—
Tappers .....	14 -	—	—	—	—	—	—
Calenderers .....	15 -	—	—	—	—	—	—
Sizers, dressers, &c. ....	18 10	—	—	32 -	40 -	17 -	—
Card minders .....	—	—	—	—	—	—	—
Foremen mechanics .....	—	—	—	—	—	—	24 -
Engineers .....	—	—	—	—	—	—	—
Mechanics and millwrights ...	—	—	—	24 -	27 -	18 -	21 -
Blacksmiths .....	—	—	—	—	—	21 -	—
Joiners .....	—	—	—	—	—	—	21 -
Firemen .....	—	—	—	—	—	—	14 -
Labourers .....	—	—	—	12 -	17 -	—	12 -
Average of all .....	—	—	—	—	—	—	—

TABLE 30 *Contd.*—SCOTLAND. *Average earnings of cotton operatives.*

Year .....	1856.	1857.	1858.	1858.	1859-60.	1860.	1860.
Place .....	Glasgow.	Glasgow.	Glasgow.	Glasgow.	Glasgow.	?	
Authority.....	3.	3.	36.	3.	3.	20a.	20b.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Scutchers overlookers .....	—	—	—	—	—	—	15 6
Carding masters .....	24/-, 36/-	24/-, 36/-	—	24/-, 36/-	24/-, 36/-	—	26 -
Pickers .....	—	—	—	—	—	5 10	—
Mixers .....	—	—	—	—	—	—	12 -
Scutchers.....	—	—	—	—	—	—	—
Strippers .....	—	—	—	—	—	—	12 -
Grinders .....	—	—	—	—	—	10 10	12 -
Drawing frame tenters .....	—	—	—	—	—	6 8	—
Stubbing frame tenters .....	—	—	—	—	—	—	—
Intermediate frame tenters ..	—	—	—	—	—	—	—
Roving frame tenters .....	—	—	—	—	—	—	—
All tenters, average .....	9 -	9 -	—	9 -	9/-, 10/-	—	6 5
Little tenters .....	3/-, 4/6	3/-, 4/6	—	3/-, 4/6	3/-, 4/6	—	—
Stretchers .....	—	—	—	—	—	—	—
Spinning overlookers ..	24/-, 39/-	24/-, 39/-	—	24/-, 39/-	24/-, 39/-	—	—
Self-acting overlookers .....	21 -	21 -	—	21 -	21/-, 27/-	—	25 -
Spinners, 1st class.....	39 -	39 -	—	39 -	33/-, 39/-	—	—
" 2nd " .....	33 -	33 -	—	33 -	27/-, 33/-	—	—
" 3rd " .....	18 -	18 -	—	18 -	18/-, 21/-	—	—
" women .....	—	—	—	—	—	8 -	6 9
" average .....	—	—	27 -	—	—	—	—
Piecers, 1st class .....	10 -	10 -	—	10 -	9/-, 10/-	—	—
" 2nd " .....	9 -	9 -	—	9 -	7/6, 9/-	—	—
" 3rd " .....	8 -	9 -	—	9 -	4/6, 8/-	—	—
" average .....	—	—	—	—	—	—	4 -
Throstle spinners. W.....	—	—	—	—	—	—	—
" " G.....	—	—	—	—	—	—	—
" " Average ..	—	—	—	—	—	4 9	—
Reelers overlookers .....	—	—	—	—	—	—	17 -
Winders .....	8 -	7 6	9 -	8 -	9 -	—	4 6
Warpers. M. ....	—	—	16 6	—	—	—	—
" W. ....	—	—	—	—	—	—	—
Hand loom warpers .....	22 -	18 -	—	17 -	18 -	—	—
Twisters in .....	—	—	12 -	—	—	—	—
Power loom overlookers .....	30 -	30 -	38 -	30 -	30/-, 36/-	19 9	—
" weavers, 1 loom .....	—	—	—	—	—	—	—
" " 2 looms .....	—	—	—	—	—	—	—
" " 3 " .....	—	—	—	—	—	—	—
" " 4 " .....	—	—	—	—	—	—	—
" " average.....	8 6, 11/-	8 6, 11	9 9	8/6, 11/-	{ 8/6, 10/-, 11 - }	7 3	—
Tappers .....	—	—	—	—	—	—	—
Calenderers .....	—	—	—	—	—	—	—
Sizers, dressers, &c. ....	32 -	32 -	35 -	32 -	32/-, 36/-	20 -	—
Card minders .....	—	—	—	—	—	—	—
Foremen mechanics.....	—	—	—	—	—	—	26 -
Engineers.....	{ 25/-, 30/-, 30/- }	{ 25/-, 30/-, 30/- }	—	{ 25/-, 30/-, 30 - }	{ 25/-, 30/-, 30/- }	—	—
Mechanics and millwrights ...	24/-, 25/-	24/-, 25/-	26 -	24/-, 25/-	24/-, 27/-	18 -	22 6
Blacksmiths .....	—	—	—	—	—	19 -	—
Joiners .....	—	—	—	—	—	—	20 -
Fishmen .....	—	—	—	—	—	—	15 3
Labourers .....	—	—	15 -	—	—	—	13 -
Average of all .....	—	—	—	—	—	—	—

TABLE 30 *Contd.*—SCOTLAND. *Average earnings of cotton operatives.*

Year .....	1861.	1863.	1866.			1870.	1870.
Place .....	Glasgow.	Glasgow.	Glasgow. Proportionate numbers.			?	?
Authority.....	3.	3.	a.	b.	3.	20a.	20b.
	s. d.	s. d.			s. d.	s. d.	s. d.
Scutchers overlookers .....	—	—	—	—	—	—	16 6
Carding masters .....	24/-, 36/-	30 -	0 55	0 33	27 -	—	30 -
Pickers .....	—	—	—	—	—	6 8	—
Mixers .....	—	—	—	—	—	—	13 -
Scutchers.....	—	—	1 44	1 25	8 7	—	—
Strippers .....	—	—	—	0 65	11 6 W.	—	14 -
Grinders .....	—	—	1 44	0 76	19 6	12 4	14 -
Drawing frame tenters .....	—	—	1 22	1 20	10 -	9 1	—
Stubbing frame tenters .....	—	—	5 22	9 59	10 -	—	—
Intermediate frame tenters ..	—	—	—	—	—	—	—
Roving frame tenters .....	—	—	—	—	—	—	—
All tenters, average .....	9/-, 10 -	10 -	—	—	—	—	7 -
Little tenters .....	3/-, 4 6	3/-, 4/6	5 9	—	5 9	—	—
Stretchers .....	—	—	—	—	—	—	—
Spinning overlookers .....	24/-, 39/-	24/-, 39/-	—	—	—	—	—
Self-acting overlookers .....	21/-, 25 6	22 -	0 15	0 38	27 -	—	23 -
Spinners, 1st class.....	30/-, 39/-	32 -	—	—	26 -	—	—
„ 2nd „ .....	27/-, 33/-	27/-, 30/-	2 33	3 98	19 6 W.	—	—
„ 3rd „ .....	18 -, 21/-	18 -, 21 -	0 33	—	19 - W.	—	—
„ women .....	—	—	—	—	—	10 3	7 8
„ average.....	—	—	—	—	—	—	—
Piecers, 1st class .....	9 -, 10 6	10 -	5 33	6 81	13 6	—	—
„ 2nd „ .....	7 6, 9 -	9 -	—	—	—	—	—
„ 3rd „ .....	4 6, 8 -	4/6, 8/-	3 55	3 98	6 -	—	—
„ average.....	—	—	—	—	—	—	5 6
Throstle spinners. W.....	—	—	4 78	1 96	9 6	—	—
„ „ G.....	—	—	2 55	—	6 -	—	—
„ „ Average... ..	—	—	—	—	—	6 8	—
Reelers overlookers .....	—	—	—	—	—	—	17 6
„ .....	—	—	7 63	4 79	10 6	—	4 8
Winders .....	9 -	6 -	5 44	3 92	9/-, 10/-	—	—
Warpers. M.....	—	—	1 55	1 14	22 -	—	—
„ W.....	—	—	—	—	14 -	—	—
Hand loom warpers .....	18 -	16 -	—	—	21 -	—	—
Twisters-in .....	—	—	1 00	0 22	20 -, 9 6 (5)	—	—
Power loom overlookers .....	30 -, 33 -	28 -	1 12	—	45 -	27 1	—
„ weavers, 1 loom .....	—	—	—	—	—	—	—
„ „ 2 looms .....	—	—	—	—	—	—	—
„ „ 3 „ .....	—	—	—	—	—	—	—
„ „ 4 „ .....	—	—	—	—	—	—	—
„ „ average.. ..	8 6, 11 -	9 -, 10 -	—	—	—	9 4	—
Tappers .....	—	—	—	—	—	—	—
Calendarers .....	—	—	—	—	—	—	—
Sizers, dressers, &c. ....	30/-, 36/-	28 -	0 33	0 49	33/-, 35/-	21 -	—
Card minders .....	—	—	2 78	1 20	7 -	—	—
Foremen mechanics.....	—	—	—	—	—	—	35 -
Engineers .....	{ 25/-, 30/-, }	—	0 11	0 16	24/-, 40/-	—	—
„ 30/- .....	—	—	—	—	—	—	—
Mechanics and millwrights ..	24/-, 27/-	24 -	2 12	—	27 -	19 -	25 -
Blacksmiths .....	—	—	—	—	—	18 -	—
Joiners .....	—	—	—	—	—	—	25 -
Firemen .....	—	—	0 33	0 32	20 6	—	15 -
Labourers.....	—	—	—	—	—	—	15 -
Average of all.....	—	—	—	—	—	—	—

TABLE 30 *Contd.*—SCOTLAND. *Average earnings of cotton operatives.*

Year .....	1871.	1871.	1874.	1875.	1883.	1875.	1884.
Place .....	Ayr-shire.	Glas-gow.	?	?	?	?	?
Authority .....	9.	9.	20b.	20a.	20a.	20b.	20b.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Scutchers overlookers .....	—	—	16 6	—	—	17 —	19 —
Carding masters .....	—	—	30 —	—	—	30 —	30 —
Pickers .....	—	—	—	7 10	7 —	—	—
Mixers .....	—	—	15 —	—	—	15 6	15 6
Scutchers .....	—	—	—	—	—	—	—
Strippers .....	—	18 —	16 —	—	—	16 —	16 —
Grinders .....	—	18 —	16 —	15 1	14 —	16 —	16 —
Drawing frame tenters .....	—	—	—	9 4	8 5	—	—
Slubbing frame tenters .....	—	—	—	—	—	—	—
Intermediate frame tenters .....	—	—	—	—	—	—	—
Roving frame tenters .....	—	7 —	—	—	—	—	—
All tenters, average .....	8 —	—	8 8	—	—	8 8	8 4
Little tenters .....	—	5 6, 6/3	—	—	—	—	—
Stretchers .....	—	—	—	—	—	—	—
Spinning overlookers .....	—	—	—	—	—	—	—
Self-acting overlookers .....	—	—	30 —	—	—	30 —	31 —
Spinners, 1st class .....	—	—	—	—	—	—	—
“ 2nd „ .....	—	—	—	—	—	—	—
“ 3rd „ .....	—	—	—	—	—	—	—
“ women .....	6 1/2, 12 1/2	—	8 6	11 8	9 4	8 6	9 —
“ average .....	—	29 1/2, 50 1/2	—	—	—	—	—
Piecers, 1st class .....	—	10 —	—	—	—	—	—
“ 2nd „ .....	—	6 6	—	—	—	—	—
“ 3rd „ .....	—	—	—	—	—	—	—
“ average .....	—	—	6 6	—	—	6 6	7 —
Throstle spinners, W. ....	—	—	—	8 10	7 5	—	—
“ „ G. ....	—	—	—	—	—	—	—
“ „ Average .....	—	—	—	—	—	—	—
Reelers overlookers .....	—	—	23 —	—	—	23 —	23 —
“ .....	—	—	6 3	—	—	5 5	7 5
Winders .....	—	—	—	—	—	—	—
Warpers, M. ....	—	—	—	—	—	—	—
“ W. ....	—	—	—	—	—	—	—
Hand loom warpers .....	—	—	—	—	—	—	—
Twisters-in .....	—	—	—	—	—	—	—
Power loom overlookers .....	—	—	—	27 2	24 2	—	—
“ weavers, 1 loom .....	—	—	—	—	—	—	—
“ „ 2 looms .....	—	—	—	—	—	—	—
“ „ 3 „ .....	—	—	—	—	—	—	—
“ „ 4 „ .....	—	—	—	—	—	—	—
“ „ average .....	9 —	—	—	10 2	9 2	—	—
Tappers .....	—	—	—	—	—	—	—
Calenders .....	—	—	—	—	—	—	—
Sizers, dressers, &c. ....	20 1/2, 30 1/2	—	—	21 —	22 —	—	—
Card minders .....	—	—	—	—	—	—	—
Foremen mechanics .....	—	—	40 —	—	—	40 —	50 —
Engineers .....	—	—	—	—	—	—	—
Mechanics and millwrights .....	20 —, 28 —	—	28 —	22 —	20 —	25 6	25 6
Blacksmiths .....	—	—	—	24 —	21 6	—	—
Joiners .....	—	—	20 9	—	—	27 9	28 —
Firemen .....	—	—	21 —	—	—	21 —	21 6
Labourers .....	12 1/2, 16 1/2	—	17 —	—	—	17 —	18 —
Average of all .....	—	—	—	—	—	—	—



TABLE 30 *Contd.*—SCOTLAND. *Average earnings of cotton operatives.*

Year .....	1886.		1891.	1891.	1891.	1891.	1906.	
Place .....	Scotland.		Lanark	Glasgow.	Glasgow.	Johnstone.	Scotland.	
Authority.....	1.		7a.	7b.	7c.	7d.	2.	
	No.	Wages.					No.	Wages.
		s. d.	s. d.	s. d.	s. d.	s. d.		s. d.
Scutchers overlookers .....	—	—	—	—	—	—	—	—
Carding masters .....	13	27 5	—	36	36/-, 40/-	—	—	—
Pickers .....	—	—	—	—	—	—	—	—
Mixers .....	5	7 19 W.	—	—	—	8 3	—	—
Scutchers.....	13	9 6 W.	—	—	—	—	—	—
Strippers .....	17	18 1	—	—	—	—	—	—
Grinders .....	—	—	—	—	—	—	—	—
Drawing frame tenters .....	32	8 9	9	—	—	—	23	13 10
Slubbing frame tenters .....	—	—	11	—	—	—	23	14 4
Intermediate frame tenters .....	111	10 1	—	—	—	—	31	12 5
Roving frame tenters .....	—	—	11	—	—	—	72	11 10
All tenters, average .....	143	9 9	—	12 9	12	6/-, 12/-	119	12 8
Little tenters .....	42	5 11	—	—	—	—	—	—
Stretchers .....	—	—	—	—	—	—	—	—
Spinning overlookers .....	—	—	—	—	—	—	—	—
Self-acting overlookers .....	12	24 9	—	—	—	—	—	—
Spinners, 1st class.....	—	—	—	—	—	—	—	—
„ 2nd „ .....	—	—	—	—	—	—	—	—
„ 3rd „ .....	—	—	—	—	—	—	—	—
„ women .....	—	—	10	14 9	14 6	8/-, 12/-	—	—
„ average .....	22	25 5	—	—	—	—	—	—
Piecers, 1st class .....	191	10 2	—	—	—	—	—	—
„ 2nd „ .....	—	—	—	—	—	—	—	—
„ 3rd „ .....	156	6 6	—	—	—	—	—	—
„ average.....	350	8 6	—	—	—	—	—	—
Throstle spinners, W.....	98	9 10	—	—	—	—	98	10 9
„ „ G.....	23	6 6	—	—	—	—	—	—
„ „ Average .....	121	9 3	—	—	—	—	—	—
Reelers overlookers .....	4	23 9	—	—	—	—	—	—
„ .....	48	9 5	8/-, 13/-	—	—	—	110	12 6
Winders .....	904	9 2	12/-, 14/-	—	—	10/-, 12/- (6)	473	11 10
Warpers, M. ....	45	28 6	—	—	—	—	—	—
„ W. ....	30	14 9	—	—	—	—	49	15 4
Hand loom warpers .....	—	—	—	—	—	—	—	—
Twisters-in .....	67	25 10	—	—	—	—	—	—
Power loom overlookers .....	101	42 6	—	—	—	—	60	44 10
„ weavers, 1 loom .....	40	3 11	—	—	—	—	—	—
„ „ 2 looms .....	2,512	10 6	—	—	—	—	1,074	13
„ „ 3 „ .....	560	13 2	—	—	—	—	242	12 8
„ „ 4 „ .....	—	—	—	—	—	—	—	—
„ „ average .....	3,112	10 11	14	—	—	10/-, 12/- (6)	1,316	12 11
Tappers.....	—	—	—	—	—	—	—	—
Calenderers .....	—	—	—	—	—	—	—	—
Sizers, dressers, &c. ....	47	43 1	—	—	—	—	—	—
Card minders .....	—	—	—	—	—	—	—	—
Foremen mechanics.....	—	—	—	—	—	—	—	—
Engineers.....	18	28 3	—	—	—	—	26	26 4
Mechanics and millwrights ..	76	25 11	—	—	—	—	32	32 4
Blacksmiths .....	—	—	—	—	—	—	—	—
Joiners .....	9	27	—	—	—	—	—	—
Firemen .....	10	20 1	—	—	—	—	—	—
Labourers.....	6	17	—	—	—	—	18	18 4
Average of all .....	5,974	12 3	—	—	—	—	4,028	14 9

*Notes to Table 30.*

(1) 1810, 21s.; 1811, 19s. 6d.; 1812, 20s.; 1813-15, 21s.; 1816-18, 18s.; 1819, 15s.; 1831, 16s. 6d. The calenderers are given as 15s., 1810-18, and 14s. in 1819.

(2) Cardroom children.

(3) Doubtful if men or women, or whether power or hand loom.

(4) Females in a large mill. Children, 1s. to 1s. 6d.

(5) Twisters, men, 20s. Drawers, women, 9s. 6d.

(6) At Kilmarnock, in another mill, same authority.

\*\* From the Royal Commission on Hand-loom Weavers, 1838.

In 1833 a very detailed census, with the averages grouped according to sex and age, was taken, and is recorded by Ure and in the "Returns of Wages," 1886. It applied only to Glasgow, and included 4,261 males at 11s. 9½*d.* and 7,445 females at 5s. 9¼*d.*, the average of all being 7s. 11¾*d.* The wage census results of 1886 and 1906 are, for Scotland:—

	1886.		1906.	
	Numbers.	Wage.	Numbers.	Wage.
		s. d.		s. d.
Men.....	647	29 9	666	30 11
Lads and boys .....	188	8 9	159	9 5
Women .....	3,825	10 11	2,543	12 9
Girls .....	1,314	7 10	660	7 5
All.....	5,974	12 3	4,028	14 9

Macculloch gives, for 1845,<sup>15</sup> 8s. to 9s. as the average for all workers in weaving and spinning at Glasgow. It is doubtful how much the inclusion of the other Scottish centres, as Lanark, Johnstone, Paisley, &c., would affect the figures given by Ure and Macculloch as representing all Scotland. Judging by those given for Lanark in 1833 in Table 30 (David Dale and Robert Owen's mill, to which also the 1891 figures refer), the effect would not be great, but would slightly lower the average.

To find our intermediate figures, we have not only the records given in the table, but some miscellaneous information of varying value which does not lend itself to tabulation. In the Returns of Wages we learn that wages had not varied much for several years previous to 1831, and this is borne out by our tabulated statements. On the whole there was probably a reduction, but it does not appear to have been great, and mainly affected mule-spinners. Before the Commission on Artisans and Machinery (1824) a master stated that the wages of spinners was 25s., but the operatives stated them as 23s. to 24s. The employers stated them as having been 30s. in 1819-20, and the men as 26s. or 27s. This is evidence of a reduction of some 3s. to 5s. between 1820 and 1824. In 1837 a great strike of spinners took place, which was unsuccessful in averting a threatened reduction. A considerable amount of evidence was taken about this strike by the Select Committee on Combinations of Workmen, 1838, and the main purport is reproduced in the following paragraphs:—

A master.—Spinners average 20s. to 26s. or 27s., and vary even up to 40s. An advance took place in 1836, amounting to 13, 15, or 16 per cent. Then came a reduction of 16 per cent., and another of 30 per cent., making 46 per cent. in all. The hours worked were 69.

Another master.—His reduction amounted to 25 per cent. on the autumn of 1836.

<sup>15</sup> *Statistical Account of the British Empire*, p. 694.

An operative.—The reduction is about one-half of the wages of 1836.

Another operative.—In 1824 a strike took place. In 1826 a reduction of 15 per cent. and 7 per cent., equalling 22 or 23 per cent. From 1827 to 1836 there was no rise; in 1836 one took place. There had been changes in machinery, and the earnings had not fallen to so great an extent as prices had. The earnings before the advance in 1836 were 22*s.* to 25*s.*; after, 27*s.* for half the men. The reductions in 1837 equalled 57 to 58½ per cent. on the gross wages. There were 900 to 1,000 spinners in Glasgow. None earned 40*s.*; one in seven or eight earned 35*s.*; the average was 21*s.* or 22*s.*, made up of one in eight at 35*s.*, a second class at 24*s.* or 25*s.*, and the lowest at 12*s.* to 16*s.*

Another spinner.—His average after the reduction was 40*s.* gross, less 13*s.* 6*d.* to piecers, leaving 27*s.* 6*d.* (*sic*) less 2*s.* 6*d.* or 3*s.* for odd piecing. Considered his average 25*s.* This was spinning on a pair of mules. On a double pair he earned 75*s.*, less 25 per cent., equal 56*s.* 3*d.*, less 25*s.* 6*d.* for piecing, leaving 30*s.* 9*d.* net. Piecers' wages were 7*s.* highest, and 2*s.* 6*d.* or 3*s.* lowest, the averages being: big, or outside, 6*s.* 3*d.*; inside, 4*s.* 6*d.*; little, 2*s.* 6*d.* There had been no advance in spinners' rates between 1812-14 and 1836.

The historian Alison also gave evidence about this strike, and he estimated the average wages of spinners at 24*s.* or 25*s.*, thus substantiating the operatives. He estimated the loss in wages by the strike to have fallen on 800 spinners at 30*s.*, 2,400 piecers at 4*s.*, and 2,400 card and picking-room hands at 8*s.* This does not agree with the rest of his evidence, but it indicates how difficult the question of spinners' average earnings is. In connection with this evidence, the *Edinburgh Review*, in 1838 (p. 238), states that the spinners' wages were 30*s.* to 35*s.* early in 1836, were 35*s.* to 42*s.* later, and after the reduction of 1837 became 26*s.* to 36*s.* This is very *ex parte* evidence, however, and quite unreliable.

There were many women spinners employed in Glasgow at this time, and throughout the century. Professor Chapman<sup>15</sup> says that in 1837, shortly after the strike, there were as many women spinners as men, the women winding mules of 250 spindles only. Mr. Henderson gives a record of the wages of women spinners (see Table 30, cols. marked 20*b*), but the wage census of 1886 does not mention them. It does show, however, 194 young women piecers, and only 22 men spinners, indicating probably that the men were more nearly overseers, superintending the work of women spinners. In 1906 there are no spinners' or piecers' wages recorded in the wage census.

In 1883 Mr. Henderson, the Factory Inspector, estimated the average wage of mule spinners (men) in Scotland as 28*s.*

A witness to the Glasgow (Municipal) Housing Commission stated that in a Glasgow cotton spinning factory the average wage had advanced by 25 per cent. between 1870 and 1902.

<sup>15</sup> *Lancashire Cotton Industry*, p. 14.

The figures for calenderers from 1810 to 1838 may be compared with the following, embodied in agreements between the operatives and employers:—1890-1900, 28*s.*; 1901-05, 29*s.*; 1906-09, 30*s.*

Miss Margaret Irwin, one of the lady commissioners of the Labour Commission, in her report, from which the tabulated statements for 1892 are taken, stated the average wages of weavers in various Glasgow mills to have been:—

		<i>s.</i>	<i>d.</i>	
Mill (1) .....	1892	13	2	per weaver, 6 <i>s.</i> 7 <i>d.</i> per loom.
" (2) .....	'92	13	10	" 6 <i>s.</i> 11 <i>d.</i> "
" (3) .....	'92	14	11	" for 5 weavers, but
" (4) .....	'92	13	11	" " the mill.
" (6) .....	'92	11	8½	"
" (7) .....	'92	14	—	" 7 <i>s.</i> 6 <i>d.</i> per loom.
" (8) .....	'92	13	—	" 6 <i>s.</i> 6 <i>d.</i> "
	'87	14	—	"
	'88	12	9½	" for six months.
	'88	13	6½	"
	'89	11	10	"
	'89	12	9½	"
	'90	13	4	"
	'90	10	6½	"
	'91	11	7	"
	'91	12	—	"

Assuming that the average of 8*s.* given by Ure in 1833 for Glasgow is typical of the whole of Scotland, and comparing it with the average for Scotland for the wage census of 1886, 12*s.* 3*d.*, and 1906, 14*s.* 9*d.*, we get the following index-numbers representing the changes in average wages of cotton factory operatives from 1833 to 1906:—

TABLE 31.—*Percentage variations in wages of cotton factory operatives in Scotland, 1833-1906. 1886 = 100.*

1833 .....	65½	1860 .....	73½	1883 .....	96½
'40-41 .....	59½	'63-64 .....	69½	'86 .....	100
'45 .....	69½	'66 .....	79½	'91 .....	114½
'49-50 .....	61	'70 .....	86½	1906 .....	120½
'55 .....	70	'74 .....	99½		

#### *Hand-loom weavers.*

We have a large quantity of material relating to hand-loom weavers, mainly recorded in the Committee of 1835 and the Commission of 1838-40, and all the records agree that an extraordinary fall in prices paid and amounts earned took place between the early years of the century and 1830-40. Here, however, the agreement practically ends, and it is difficult to arrive at a series of numbers representing the course of average earnings which can be put forward with any certainty.

We have several consecutive lists of piece prices for the same description of work throughout, we have also other lists of average earnings or estimates of probable earnings; but, while we do not hear of any changes in condition which would augment the weavers'



earnings in a given space of time, the changes in prices are not reflected too faithfully in changes in earnings. As prices fell the weaver lengthened his or her working week, so that the course of prices is not in itself sufficient. On the other hand, the earnings stated usually leave us in doubt whether they are gross, out of which the rent of the loom and the cost of winding had to be paid, or net after these charges were met.

In 1769, when Arthur Young took his northern tour, and before Arkwright's inventions in spinning had brought the enormous increase in the supplies of yarn, wages of hand-loom weavers were not high. For Manchester, Young gives quite a long list, and the lowest earnings of men recorded by him are 3*s.* per week, the highest 12*s.* Apparently, 5*s.* 6*d.* to 7*s.* would be the average. At Mellor, according to Radcliffe,<sup>17</sup> about 1770, the cottagers were entirely employed at spinning and weaving except at harvest, the father earning 8*s.* to 10*s.* 6*d.* and his sons 6*s.* to 8*s.* per week. "The great sheet-anchor of the cottages and small farms" was the hand-wheel, as it required six or eight hands to spin enough cotton, flax, or wool to suffice for one weaver. Between 1770 and 1778 the conditions became completely changed. Cotton became the universal material, hand-wheels were thrown into the lumber room, the spinning was done on common jennies, and the carding on carding engines for all degrees of fineness up to 60's or 80's counts. The enhanced supply of yarn and its increasing cheapness brought a demand for weavers which for years was never fully met. From 1788 to 1803 was the golden age of hand-loom weaving. "The old loom shops being insufficient," says Radcliffe, "every lumber room, even old barns, carhouses, and outbuildings of any description were repaired, windows broken through old blank walls, and all fitted up for loom shops. The price of labour . . . rose to five times the amount ever before experienced in this district [Mellor], every family bringing home 40, 60, 80, 100, and even 120 shillings per week." We should expect from this that contemporary statements would show very high wages during this period, and this they do. In 1792, for instance, a Bolton weaver was paid 3*s.* per yard for an article of which he could weave 20 yards a week, but would have to pay something, presumably, for loom rent and winding. Another Bolton record shows 29*s.* in 1797 and 30*s.* in 1798 as the earnings per week. A very large amount of information is obviously required if we would attempt the computation of an average wage for hand-loom weavers in this period. This material we do not possess, but in each year from 1790 onwards our information increases, until from 1810 we have no dearth of material, and our main difficulty lies in its apparent contradictions. We are, of course, mainly concerned with the period after 1806, for this is the start of our information regarding factory operatives.

Such long series of statements as we can procure are given in Tables 32 and 33. These tables contain both statements of piece prices and either estimates of actual earnings or records actually taken from wages books. On the whole, the weekly wages seem to

<sup>17</sup> *Origin of the system of power-loom weaving.*



be records of actual earnings, but some, notably the weavers of pullicates at Glasgow, are almost certainly estimates based on the piece-rates paid. This accounts in some measure for the discrepancies in the figures.

The number of hand-loom weavers exceeded the numbers employed in factories until quite a late date, probably until 1833. The course of their wages is totally unlike that of factory operatives, and we need therefore to examine the evidence at some length before arriving at a final estimate.

### Notes to Tables.

(a.) A classic list. Quoted from Gaskell, *Artizans and Machinery*, given also by Porter and others. The rent of 4 looms in 1797-1803, 9*l.*; 1804-17, 8*l.*; 1818-34, 7*l.*; and of 2 looms, 1797-1803, 5*l.* 10*s.*; 1804-17, 6*l.*; 1818-34, 5*l.* 10*s.*

(b.) Prices for weaving "20<sup>00</sup>  $\frac{9}{8}$  jaconet, 46 in., 155 shots per inch. In 1792-1817, less 6*d.*; 1818-25, less 2½*d.*; 1831-38, less 1*d.* From the Hand-loom Weavers' Commission, 1838-40.

(c.) Price for weaving bed quilts. Three quilts were a week's work. (Select Committee on Manufactures, Commerce and Shipping, 1833.)

(d.) Prices per yard. In 1792, 20 yards was said to have been a week's work; in 1824, 24 yards. The earnings were said to have been, in 1818, 6*s.* to 7*s.* clear; in 1824, 5*s.* 6*d.* clear and 2*s.* to 3*s.* by the wife. (*Artizans and Machinery*, 1824.)

(e.) Prices per yard. The earnings were said to have been 20*s.* in 1800, and 7*s.* for self and 4*s.* for wife in 1824. (*Ibid.*)

The discrepancies between (d) and (e) are characteristic of these hand-loom weavers' wages records.

(f.) From the "Returns of Wages," 1886.

(g.) From Rooke, *National Wealth* for 1798-1823, and for Carlisle from the Hand-loom Weavers' Commission, 1838-40, for 1824-38. Eden, *State of the Poor*, gives for Wetherall, in Cumberland, circa 1795—weaver 7*s.* to 8*s.*, girl and wife, winding 2*s.* 6*d.*; and another, weaver, 21*l.*, wife, 8*l.* For Carlisle he gives, generally, 8*s.* to 9*s.* 6*d.*, some 12*s.* to 15*s.*

(h.) From Porter. This should be compared with column 3 of Table 33 below. I cannot trace the source of the differences. Porter is usually correct, but in this case Maxwell's figures seem best.

(i, j, k, l.) From the Hand-loom Weavers' Commission, 1838-40. (i) and (k) are for inferior weavers on inferior work. (j) and (l) are for skilled weavers on best work. J. C. Symonds was the Commissioner, and he says these are net wages, collated from various manufacturers' books.

(m.) From the same source. The weekly wages are obviously calculated from the piece price, which is per ell.

(n.) *Ibid.* The weavers worked at "harness" looms, and were highly skilled. The wages are for 72 hours, 1810-25; 73 hours, 1826-31; and 74 hours, 1835-38.

(o.) From Strang, *Statistical Journal*, 1858, who continues:—

1848.	1851.	1852.	1855.	1856.	1857.	1858.
<i>s.</i> <i>d.</i>	<i>s.</i> <i>d.</i>	<i>s.</i> <i>d.</i>	<i>s.</i> <i>d.</i>	<i>s.</i> <i>d.</i>	<i>s.</i> <i>d.</i>	<i>s.</i> <i>d.</i>
6 -	5 9	6 9	7 -	7 -	6 4	5 9

The Returns of Wages gives the following for Glasgow:—

	1856.	1857.	1858.	1859-60.	1861.	1863.	1866.
	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	
Cotton .....	10 6	9 -	9 6	8 -	8 -	7 -	} Men 12 <i>s.</i> to 20 <i>s.</i> ; women 9 <i>s.</i>
Mixed fabrics....	15 -	14 -	14 -	13 -	13 -	10 6	

(*p.*) From Hand-loom Weavers' Commission, 1838-40. The prices are per ell. Wages in 1838:—1st class, 6*s.* 8*d.*; 2nd class, 4*s.* 8*d.*; old and children, 3*s.* 2*d.* In 1800 the earnings were 20*s.*; in 1838, 8*s.* on another class of work.

(*q.*) *Ibid.* In 1838, very fine 7*s.* 6*d.*, 8*s.*; ordinary, 1st class 5*s.* 7½*d.*, 2nd class 4*s.* 3*d.*; "harness" weavers 6*s.* 6*d.* The wages in the table are net.

TABLE 32.—Wages of hand-loom weavers. 1792-1838.

Place.	Notes.*	1792.	1793.	1794.	1795.	1796.	1797.	1798.	1799.	1800.
		<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>
Bolton .....	Wages ( <i>a</i> )	—	—	—	—	—	29 -	30 -	25 -	25 -
" jaconet .....	Prices ( <i>b</i> )	2 8	—	—	—	—	—	—	—	1 11
" quilts .....	" ( <i>c</i> )	—	—	—	—	—	—	—	—	—
" .....	" ( <i>d</i> )	3 -	2 -	1 9	1 9	1 9	1 6	1 3	1 2	1 2
" .....	" ( <i>e</i> )	—	—	—	—	—	—	—	—	1 2
Manchester, nankeens.....	Wages ( <i>f</i> )	—	—	—	—	—	—	—	—	—
" cambrics, 60-reed .....	" ( <i>f</i> )	—	—	—	—	—	—	—	—	—
" " 80 " .....	" ( <i>f</i> )	—	—	—	—	—	—	—	—	—
" quiltings, 36 " .....	" ( <i>f</i> )	—	—	—	—	—	—	—	—	—
" " fine ... ..	" ( <i>f</i> )	—	—	—	—	—	—	—	—	—
Wigton, Cumberland .....	" ( <i>g</i> )	—	—	—	—	—	—	13 -	14 -	15 -
Glasgow .....	" ( <i>h</i> )	—	—	—	—	—	—	—	—	13 1
" gingham .....	" ( <i>i</i> )	—	—	—	—	—	—	—	—	—
" pulicates .....	" ( <i>j</i> )	—	—	—	—	—	—	—	—	—
" plain muslins .....	" ( <i>k</i> )	—	—	—	—	—	—	—	—	—
" .....	" ( <i>l</i> )	—	—	—	—	—	—	—	—	—
" pulicates .....	Prices ( <i>m</i> )	—	—	—	—	—	—	—	—	—
" .....	Wages ( <i>n</i> )	—	—	—	—	—	—	—	—	—
" shawls... ..	" ( <i>n</i> )	—	—	—	—	—	—	—	—	—
" .....	" ( <i>o</i> )	—	—	—	—	—	—	—	—	—
Perth, pulicates .....	Prices ( <i>p</i> )	—	—	—	—	—	—	—	—	—
Lanark .....	Wages ( <i>q</i> )	—	—	—	21 -	—	—	—	—	18 6

Place.	Notes.*	1801.	1802.	1803.	1804.	1805.	1806.	1807.	1808.
		<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>
Bolton .....	Wages ( <i>a</i> )	25 -	29 -	24 -	24 -	25 -	22 -	18 -	15 -
" jaconet .....	Prices ( <i>b</i> )	—	—	—	—	—	—	1 8	—
" quilts .....	" ( <i>c</i> )	—	—	—	—	—	—	—	—
" .....	" ( <i>d</i> )	1 2	1 4	- 11	- 11	- 9	- 8	- 7	- 6½
" .....	" ( <i>e</i> )	—	—	—	—	- 11	—	—	—
Manchester, nankeens.....	Wages ( <i>f</i> )	—	—	—	—	—	—	—	—
" cambrics, 60-reed .....	" ( <i>f</i> )	—	—	—	—	—	—	—	—
" " 80 " .....	" ( <i>f</i> )	—	—	—	—	—	—	—	—
" quiltings, 36 " .....	" ( <i>f</i> )	—	—	—	—	—	—	—	—
" " fine ... ..	" ( <i>f</i> )	—	—	—	—	—	—	—	—
Wigton, Cumberland .....	" ( <i>g</i> )	16 -	17 -	19 -	21 -	23 -	22 -	19 6	14 -
Glasgow .....	" ( <i>h</i> )	—	—	—	—	15 4	17 8	15 6	13 2
" gingham .....	" ( <i>i</i> )	—	—	—	—	—	—	—	—
" pulicates .....	" ( <i>j</i> )	—	—	—	—	—	—	—	—
" plain muslins .....	" ( <i>k</i> )	—	—	—	—	—	—	—	—
" .....	" ( <i>l</i> )	—	—	—	—	—	—	—	—
" pulicates .....	Prices ( <i>m</i> )	—	—	—	—	—	1 3	1 -	- 11
" .....	Wages ( <i>n</i> )	—	—	—	—	—	32 6	25 9	23 -
" shawls... ..	" ( <i>n</i> )	—	—	—	—	—	—	—	—
" .....	" ( <i>o</i> )	—	—	—	—	—	—	—	—
Perth, pulicates .....	Prices ( <i>p</i> )	- 4	—	- 3½	—	—	—	—	- 4
Lanark .....	Wages ( <i>q</i> )	—	26 6	—	—	21 -	—	16/6, 13/6	14 9

\* See text, p. 106.

TABLE 32 *Contd.*—Wages of hand-loom weavers. 1792-1838.

Place.	Notes.*	1809.	1810.	1811.	1812.	1813.	1814.	1815.	1816.
		<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>
Bolton .....	Wages (a)	16 -	19 6	14 -	14 -	15 -	24 -	14 -	12 -
.. jaconet .....	Prices (b)	—	—	1 6	—	—	—	—	—
.. quilts .....	.. (c)	—	—	—	—	—	11 -	11 -	10 -
.. ..	.. (d)	- 6	- 10	- 6	- 6	- 10	- 10	- 6	- 4
.. ..	.. (e)	—	—	—	—	—	—	1 1	—
Manchester, nankeens .....	Wages (f)	—	16 3	12 6	13 -	12 6	15 7	13 2	13 2
.. cambrics, 60-reed ..	.. (f)	—	16 10½	9 -	9 5	10 8	15 4	10 5	8 4
.. .. 80 ..	.. (f)	—	14 -	10 9	10 3	11 1	16 9	10 3	8 3
.. quiltings, 36 ..	.. (f)	—	16 5½	12 7	9 6	11 5	15 -	13 -	11 11
.. .. fine ..	.. (f)	—	17 2	14 9	14 -	14 -	18 -	18 3	15 6
Wigton, Cumberland .....	.. (g)	8 11	10 10	7 3	9 6	12 2	13 1	11 6	7 7
Glasgow .....	.. (h)	11 9	11 6	7 6	9 9	12 1½	13 -	11 6	5 6
.. ..						18-10-16	17 -		
.. gingham .....	.. (i)	—	—	—	—	—	24 6	—	—
.. pulicates .....	.. (j)	—	—	—	—	—	13 6	—	—
.. plain muslins .....	.. (k)	—	—	—	—	—	17 2	—	—
.. ..	.. (l)	—	—	—	—	—	—	—	—
.. pulicates .....	Prices (m)	- 10	1 -½	- 9	1 -	- 11½	1 -½	1 -	- 6
.. ..	Wages (n)	21 3	23 9	18 -	25 9	24 9	26 9	25 9	12 3
.. shawls .....	.. (o)	—	—	—	—	20 -	—	—	—
.. ..	.. (p)	—	—	—	—	—	—	—	—
Perth, pulicates .....	Prices (p)	- 4½	- 2	—	- 3½	- 4	—	—	- 1½
Lanark .....	.. (q)	17 6	16 -	11 -	9 9	11 -	—	—	—

Place.	Notes.*	1817.	1818.	1819.	1820.	1821.	1822.	1823.	1824.
		<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>
Bolton .....	Wages (a)	9 -	9 -	9 6	9 -	8 6	8 6	8 6	8 6
.. jaconet .....	Prices (b)	—	1 -	—	—	—	—	—	—
.. quilts .....	.. (c)	7 6	7 6	7 6	7 6	7 6	6 6	6 -	6 -
.. ..	.. (d)	- 4	- 5½	- 4	- 4	- 4	- 4	- 4	- 4
.. ..	.. (e)	—	—	—	—	—	—	—	—
Manchester, nankeens .....	Wages (f)	9 6	9 6	9 6	11 -	11 -	11 -	6 6	6 6
.. cambrics, 60-reed ..	.. (f)	6 4	8 -	7 8	7 5	7 -	6 9	7 -	7 -
.. .. 80 ..	.. (f)	6 9	8 10	7 9	7 6	7 5	7 -	7 6	7 6
.. quiltings, 36 ..	.. (f)	9 8	9 8	9 8	8 6	11 6	10 -	7 -	7 -
.. .. fine ..	.. (f)	11 1	11 -	11 3	10 -	11 6	10 -	9 -	9 -
Wigton, Cumberland .....	.. (g)	7 1	8 3	7 -	6 6	6 6	7 -	7 -	7 -
Glasgow .....	.. (h)	5 9	6 6	5 -	—	—	—	—	—
.. ..						9 6	9 6	9 6	9 6
.. gingham .....	.. (i)	—	10 -	—	—	12 2	12 2	12 2	12 2
.. pulicates .....	.. (j)	—	13 5	—	—	9 -	8 9	8 3	8 6
.. plain muslins .....	.. (k)	—	9 -	—	—	14 5	13 11	12 5	12 10
.. ..	.. (l)	—	14 6	—	—	—	—	—	—
.. pulicates .....	Prices (m)	- 6	- 7½	- 8	- 5	- 6	- 6	- 6	- 6
.. ..	Wages (n)	12 3	15 9	16 9	10 -	12 3	12 5	12 3	12 3
.. shawls .....	.. (o)	—	17 6	—	—	13 10	13 6	13 -	12 -
.. ..	.. (p)	—	—	—	—	—	—	—	—
Perth, pulicates .....	Prices (p)	—	—	—	- 1	- 2	- 1	- 2	- 1
Lanark .....	Wages (q)	—	—	—	—	—	—	—	—

\* See text, p. 106.

TABLE 32 *Contd.*—Wages of hand-loom weavers. 1792-1838.

Place.	Notes.*	1825.	1826.	1827.	1828.	1829.	1830.	1831.
		<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>
Bolton .....	Wages (a)	8 6	7 -	6 6	6 -	5 6	5 6	5 6
„ jaconet .....	Prices (b)	7 ½	—	—	—	—	4 -	3 ½
„ quilts .....	„ (c)	6 -	6 -	6 -	6 -	6 -	6 -	—
„ .....	„ (d)	—	—	—	—	—	—	—
„ .....	„ (e)	—	—	—	—	—	—	—
Manchester, nankeens.....	Wages (f)	6 6	—	—	—	—	—	—
„ cambrics, 60-reed ..	„ (f)	6 3	—	—	—	—	—	—
„ 80 „ ..	„ (f)	6 6	—	—	—	—	—	—
„ quiltings, 36 „ ..	„ (f)	6 6	—	—	—	—	—	—
„ „ fine „ ..	„ (f)	8 6	—	—	—	—	—	—
Wigton, Cumberland .....	„ (g)	—	—	—	—	—	7 ½, 8 1	6 4, 7 6
Glasgow .....	„ (h)	—	—	—	—	—	—	6 -
„ gingham .....	„ (i)	7 6	6 6	7 6	6 6	6 6	6 -	6 -
„ pullicates .....	„ (j)	10 -	8 2	10 -	8 5	8 -	7 6	7 6
„ plain muslins .....	„ (k)	9 -	7 2	6 9	7 3	6 3	5 3	5 6
„ .....	„ (l)	15 -	9 5	8 11	9 2	7 11	6 5	6 5
„ pullicates .....	Prices (m)	— 5 -	4 ½	— 5 ½	— 3 ½	— 3 ½	— 3 -	— 3 -
„ .....	Wages (n)	10 -	8 3	10 -	6 7	6 -	5 6	5 6
„ shawls .....	„ (o)	13 -	10 9	10 9	10 6	10 6	10 -	10 -
„ .....	„ (o)	13 6	—	9 -	—	7 6	—	6 6
Perth, pullicates .....	Prices (p)	— 2 -	— 2 ½	— 1 ½	— 2 ½	— 2 ½	— 1 ½	— 1 ½
Lanark .....	Wages (q)	—	—	—	—	—	—	—

Place.	Notes.*	1832.	1833.	1834.	1835.	1836.	1837.	1838.
		<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>
Bolton .....	Wages (a)	5 6	5 6	5 6	—	—	—	—
„ jaconet .....	Prices (b)	—	—	—	—	—	—	3 ½
„ quilts .....	„ (c)	—	—	—	—	—	—	—
„ .....	„ (d)	—	—	—	—	—	—	—
„ .....	„ (e)	—	—	—	—	—	—	—
Manchester, nankeens.....	Wages (f)	9 -	—	—	—	—	—	—
„ cambrics, 60-reed ..	„ (f)	8 -	—	—	—	—	—	—
„ 80 „ ..	„ (f)	9 - to	—	—	—	—	—	—
„ quiltings, 36 „ ..	„ (f)	12 -	—	—	—	—	—	—
„ „ fine „ ..	„ (f)	—	—	—	—	—	—	—
Wigton, Cumberland .....	„ (g)	6 4, 7 6	6 4, 7 4	7 9, 9 6	6 3, 8 9	5 6, 7 5	4 3, 6 2	4 6, 7 6
Glasgow .....	„ (h)	—	—	—	—	—	—	—
„ gingham .....	„ (i)	5 9	5 3	6 6	6 8	5 9	4 3	4 6
„ pullicates .....	„ (j)	7 -	6 6	7 3	7 9	7 6	6 6	7 -
„ plain muslins .....	„ (k)	4 2	4 8	5 1	5 9	6 6	4 6	4 9
„ .....	„ (l)	6 9	6 6	8 1	8 2	8 10	7 9	7 6
„ pullicates .....	Prices (m)	— 3 -	— 3 -	— 3 ½	— 3 ½	— 3 ½	— 3 ½	— 3 ½
„ .....	Wages (n)	5 6	5 6	6 7	6 7	7 5	6 3	6 7
„ shawls .....	„ (o)	9 9	9 11	9 8	9 9	9 9	9 6	9 3
„ .....	„ (o)	—	—	8 -	—	—	7 -	—
Perth, pullicates .....	Prices (p)	— 1 ½	— 1 ½	— 1 ½	— 1 ½	— 1 ½	— 2 -	— 1 ½
Lanark .....	Wages (q)	—	—	—	—	—	—	5 7 ½

\* See text, p. 106.

TABLE 33.—GLASGOW. *Prices for weaving muslin, 1797 to 1834, with the weekly earnings.*

	March.						October.					
	1,200 quality.			1,400 quality.			1,200 quality.			1,400 quality.		
	Width.		Weekly average.	Width.		Weekly average.	Width.		Weekly average.	Width.		Weekly average.
	4-4.	6-4.		4-4.	6-4.		4-4.	6-4.		4-4.	6-4.	
1797...	<i>d.</i>	<i>d.</i>	<i>s. d.</i>	<i>d.</i>	<i>d.</i>	<i>s. d.</i>	<i>d.</i>	<i>d.</i>	<i>s. d.</i>	<i>d.</i>	<i>d.</i>	<i>s. d.</i>
'98...	7½	11½	12 2	12	18	—	7½	11½	12 2	12	18	—
'99...	7	10½	13 3	10½	16½	—	7	10½	11 3	10½	16½	—
	7½	11½	13 5	12½	18½	—	8	11½	13 10	12½	18½	—
1800...	7	10½	13 1	11	16	15 2	7	9½	13 7	11	14½	13 5
'01...	6½	9½	12 9	9½	14½	13 9	6½	9½	12 9	9½	14½	13 9
'02...	7	10½	13 6	11	16½	15 2	7	10½	14 8	11	17	14 1
'03...	7	10½	14 1	11½	17	15 2	6	9	13 2	10	15	13 5
'04...	6½	9	13 2	10	15	13 5	6	9½	14 6	11	17	14 11
'05...	7½	11	15 4	13	19	21 9	8	12	18 1	14	20	21 8
'06...	8½	11	17 8	14	19	21 6	7	10½	17 —	12½	17	21 1
'07...	7	9½	15 6	11½	16½	19 8	7	9½	15 6	11	16½	19 8
'08...	5½	7½	13 2	9½	13	15 9	5	7½	11 9	8½	11	14 11
'09...	5	7	11 9	8½	11½	14 11	5½	8	13 3	9½	13	16 —
1810...	6½	8½	14 9	10½	13½	16 3	6	8½	14 1	9½	13	15 5
'11...	4	6½	12 5	7½	10½	13 6	4½	6	11 1	7	9½	13 —
'12...	5	7½	13 2	8½	11½	15 7	5½	7½	13 2	8½	11½	15 7
'13...	6	8	15 2	9½	13	17 1	6	8½	15 2	9½	13	17 8
'14...	7½	10	17 4	11½	15	20 1	6	8½	14 4	9½	13	19 8
'15...	6	8½	14 1	9½	13	18 9	5½	7½	—	8½	11½	13 7
'16...	4½	6½	—	7½	10½	11 9	3½	4½	—	5½	7	9 1½
'17...	3	5	—	5½	7½	9 2½	—	—	—	—	—	—
1820...	3½	4	—	5½	7	—	3½	4	—	5½	7	—
'21...	3½	4	—	5½	7	—	3½	4	—	5½	7	—
'22...	3½	4	—	5½	7	—	2½	4	—	4½	6	—
'23...	2½	3½	—	4½	5½	—	3	3½	—	4½	5½	—
'24...	2½	3½	—	4½	5½	—	3½	4½	—	4½	6½	—
'25...	3	5	—	5½	7½	—	3½	5	—	5½	7½	—
'26...	2½	3½	—	4	5½	—	2½	3½	—	4½	5½	—
'27...	2½	3	—	3½	4½	—	2½	3	—	3½	4½	—
'28...	2½	3	—	3½	4½	—	2½	3	—	3½	4½	—
'29...	2½	2½	—	3	3½	—	2	2½	—	2½	3½	—
1830...	2	2½	—	2½	3½	—	2	2½	—	2½	3	—
'31...	2	2½	—	2½	3½	—	2	2½	—	2½	3	—
'32...	2	2	—	2½	3½	—	2	2½	—	2½	3	—
'33...	2	2	—	2½	3½	—	2	2½	—	2½	3	—
'34...	2½	2½	—	3	4	—	—	—	—	—	—	—

It was stated that the average wage of all muslin weavers in 1797 was 12s., and in 1834 6s. The earnings of a family consisting of a man, his wife, and two children would be, 1797, 14s., 1834, 7s. 6d. The earnings given in the table are the average of four weeks, by a good ordinary tradesman, of each breadth at each price.



TABLE 34.—*Prices paid to and earnings of hand-loom weavers in Lancashire, 1814-33.*

Year.	Near Colne.										Near Oldham.			
	Highest and lowest prices.		Average prices.	A good weaver could average	6 persons, including 3 children, would average	Repair of looms, rent, &c.	Leaving for food and clothing	Yearly income.		Price.	Earner's 63 hours.	Rent, fuel, &c.		
	s.	d.	s.	d.	s.	d.	s.	d.	£	s.	d.	s.	d.	
1814...	7	6	-	-	52	-	46	9	135	4	-	2	3½	
'15...	5	3	17	1	34	2	28	11	88	16	8	3	7½	
'16...	4	6	13	5	26	10	21	7	69	15	4	1	11½	
'17...	3	3	12	1	24	2	18	11	62	16	8	1	6	
'18...	4	3	14	5	28	10	23	7	74	19	4	1	1	
'19...	4	-	12	6	25	-	19	9	65	-	-	1	5½	
1820...	3	6	11	8	23	4	18	1	60	13	4	1	8	
'21...	3	6	12	7	28	3½	23	-	73	12	3	1	6	
'22...	2	9	10	2	22	10½	17	7½	59	9	6	1	5	
'23...	2	6	9	4	21	-	15	9	54	12	-	1	6	
'24...	2	3	8	6	19	11½	13	10½	49	14	6	1	7	
'25...	2	3	8	6	19	11½	13	10½	49	14	6	1	7	
'26...	2	2	5	3	11	10	7	7	30	14	3	1	5½	
'27...	2	-	1	4	14	7½	10	4½	38	-	6	1	1	
'28...	2	-	6	6	14	7½	10	4½	38	-	6	1	1	
'29...	1	3	4	8	10	6	6	3	27	-	6	1	2	
1830...	1	9	6	-	13	6	9	3	35	2	2	-	-	
'31...	1	9	6	7	14	10	10	7	38	10	3	5	10	
'32...	1	6	5	4	12	-	7	9	30	14	3	5	10½	
'33...	1	4	5	4	12	-	7	9	31	4	-	4	9½	

Table 33 is from Maxwell's *Manual Labour Machinery*, and Table 34 is from the Report of the Select Committee on Manufactures, Commerce, and Shipping, 1833 [VI of 1833].

Much will be found to turn, in the sequel, on the wages of 1806 and 1830-38. Summarising the tabulated material, the following seems the course of wages indicated by it (calculated to the nearest *3d.* per week):—

	<i>s.</i>	<i>d.</i>		<i>s.</i>	<i>d.</i>		<i>s.</i>	<i>d.</i>
1797 .....	18	9	1811 .....	12	3	1825 .....	8	3
'98 .....	19	9	'12 .....	14	—	'26 .....	7	9
'99 .....	18	6	'13 .....	15	—	'27 .....	7	6
1800 .....	18	9	'14 .....	18	6	'28 .....	7	3
'01 .....	18	6	'15 .....	13	6	'29 .....	7	3
'02 .....	21	—	'16 .....	10	3	1830 .....	6	3
'03 .....	20	—	'17 .....	8	9	'31 .....	6	—
'04 .....	20	—	'18 .....	8	3	'32 .....	6	—
'05 .....	23	—	'19 .....	8	3	'33 .....	6	—
'06 .....	20	—	1820 .....	8	3	'34 .....	7	—
'07 .....	17	3	'21 .....	8	3	'35 .....	6	3
'08 .....	13	3	'22 .....	8	3	'36 .....	6	3
'09 .....	14	—	'23 .....	8	3	'37 .....	6	3
1810 .....	14	3	'24 .....	8	3	'38 .....	6	3

This shows a very great fall, and it is necessary that we should err by under-stating rather than by over-stating so extraordinary a movement. A Glasgow weaver stated to Symonds that the average wages were *5s. 7d.* net in 1838, and that the same labour would have obtained four times as much wages in 1814, twice as much in 1824-25, equal wage in 1826-29, more in 1829, and equal wage again in 1832-35. This is a fall of 75 per cent. in twenty years. Our estimate is roughly a fall of two-thirds in the same period. The highest point is shown for 1805, but this depends to some extent on the rise at Wigton, is contradicted by the Bolton series, and is substantiated by the Glasgow series and the Lanark figures. In 1806 our average is *20s.* In that year we have *22s.* at Bolton, substantiated as to the wage being near to *20s.* by the proportionate prices shown for near that time in the other Bolton figures compared with 1824, when the earnings were between *6s.* and *8s. 6d.* At Manchester, in 1810, after a considerable fall had taken place in all districts for which we have earlier figures, the averages are from *14s.* to *17s. 2d.* This supports an estimate of *20s.* in 1806. At Glasgow we have *13s. 6d.* to *24s. 6d.* as averages for 1810-16 (1815-16 were the years of the first permanent *great* fall), and these again lead to the conclusion that the average was over *20s.* in 1806. The Lanark figures show *21s.* in 1805 and *26s. 6d.* in 1802. Maxwell's figures, taken from a master's book, show *17s. 8d.* to *21s. 6d.* in 1806, and show 1805 or 1806 to have been the year of the maximum. It would seem, therefore, that we are quite within the mark when we take *20s.* as the wage in 1806. In 1830 to 1838 our average comes out at *6s. 3d.* for the majority of the years. The evidence points to a lower rather than a higher average. At Glasgow, Symonds concluded that the majority of the weavers earned *5s.* net, on fancy muslins *5s.* to *8s.* net, on fine Paisley and Edinburgh shawls *9s.* to *14s.*, and, very occasionally only, on fancy goods *20s.* to *25s.*,

and even 30s. In a few cases, where the looms were in a factory (and the majority were in the homes of the weavers to the end), the wages were 40 per cent. higher. Generally throughout Scotland the average is rarely given as above 6s. net; sometimes it even falls to 4s. 6d. In England we have 5s. 6d. at Bolton from 1830 to 1834, 4s. 6d. to 7s. 6d. at Carlisle in 1838 (4s. 6d. was the average of 813 weavers), 5s. 4d. near Colne and 4s. 6d. near Oldham in 1833, and from various portions of the 1838-40 Commission 7s. 4d. per family and 6s. per head of those working at Preston, 5s. to 6s. at Blackburn, 5s. 5d. at Wigan, 5s. 7d. at Bolton, 4s. 6d. to 12s., less 3d. in the 1s., at Ashton, 8s. 1d. outdoors and 9s. 8d. in factories at Patricroft, and many similar figures. Baines, on the other hand, estimated them at 7s. in 1833, and Ellison at 7s. in 1829-31 and 8s. in 1844-46. I cannot trace the evidence for so high a figure, and doubt if ever after 1829 the average rose to quite as high as 7s. In the period 1830-38, it seems quite evident from the above statements that 6s. to 6s. 3d. net is quite as high as the average rose to. Perhaps, however, Baines' figure is gross. If so, it is very close to 6s. 6d. net.

Our estimates agree in the main with the following summary by the members of the Committee in 1835. "It appears," says their report, "that the wages of the hand-loom weavers have been reduced generally since 1815 to one-half or one-third of the wages paid at that period, and that the sums reduced were largest in 1816, 1817, 1826, and 1829." "The fall during the previous years," says Professor Chapman,<sup>18</sup> from whom the previous quotation is taken, "had been, roughly, from 30 to 50 per cent.; the total fall therefore ranged in all from 60 to 80 per cent." This would make 1835, 100; 1815, 200 to 300; 1800, 386 to 600. Our conclusions show 1835, 100; 1815, 220; and 1800, 300, or little more than the minimum fall estimated by Chapman and the House of Commons Committee. Mr. Bowley in his *Wages in the United Kingdom in the XIXth Century* gives as a result, "which does not pretend to exactness":—

1795.	1800.	1803.	1814.	1816.	1820.	1826.	1833.	1840.
400	300	260	220	110	100	50	60	60

indicating a much heavier fall than our estimate. We may feel secure, therefore, that in our result we have not over-estimated the amount of the fall, and that, if anything, we have under-estimated the wage in 1800-10 and over-estimated in 1830-38.

From 1838 to the end of hand-loom weaving there appears to have been very little change in the condition of the weavers.

<sup>18</sup> *Lancashire Cotton Industry*, p. 44.

## SECTION V.

CHANGES in the AVERAGE WAGE of all EMPLOYED, with some  
ACCOUNT of the FORCES OPERATING to ACCELERATE or RETARD  
the PROGRESS of the INDUSTRY.

[Read before the Royal Statistical Society, May 24, 1910, the President,  
Sir J. A. BAINES, C.S.I., in the Chair.]

As the title of this Paper indicates, I propose, in the present instance, to depart from the practice of merely estimating the advance or reduction of wages in the industry under consideration, and discussing the statistical significance of the final estimates, hitherto adopted in the Papers of this series<sup>1</sup>, by considering the various changes which have taken place in the structure and *personnel* of the cotton industry; its Collective Bargaining; the effects of Factory Legislation; and such other features as may assist us in interpreting the very great advance in average wages which has taken place during the past century.

In various sections of the series of papers dealing with the cotton industry, published in the January to April numbers of the Society's Journal, there have been given estimates of the changes in average wages of cotton operatives employed in factories at various large centres of the industry, and of the course of wages of hand-loom weavers from 1797 to 1838. For convenient reference, the estimates for factory operatives are reproduced in the following table:—

<sup>1</sup> The papers containing estimates of the course of wages during the Nineteenth Century in this series are, "Agriculture," *Journal*, September, 1899; "Building," March, 1901; "Wool and Worsted of the West Riding," March, 1902, by A. L. Bowley; and "Printers," December, 1899; and "Engineering and Shipbuilding," March, 1906, by A. L. Bowley and G. H. Wood.

TABLE 35.—*Estimates of changes in average earnings of cotton operatives employed in factories in the chief centres of the industry.*

1885 = 100.

District.	1806.	1810-16.	1817.	1818-20.	1821-22.	1823-25.	1826.	1832-33.
Manchester and district }	75 $\frac{1}{3}$	79 $\frac{1}{3}$	78 $\frac{1}{3}$	77 $\frac{2}{3}$	71 $\frac{1}{3}$	73	73 $\frac{1}{3}$	71

District.	1833.	1836.	1840-41.	1845.	1849-50.	1855.	1860.	1863-64.	1866.	1870.
Manchester ..	71	72 $\frac{1}{2}$ 1837.	65 $\frac{2}{3}$	74 $\frac{2}{3}$ 1846.	65 $\frac{2}{3}$	70 $\frac{1}{2}$	71 $\frac{2}{3}$	—	81 $\frac{1}{3}$	88 $\frac{2}{3}$
Bolton .....	62 $\frac{1}{3}$	63 $\frac{2}{3}$	65 $\frac{1}{3}$	68 $\frac{2}{3}$	67 $\frac{2}{3}$	71 $\frac{1}{3}$	81 $\frac{2}{3}$	80 $\frac{1}{3}$	89 $\frac{1}{3}$	—
Oldham .....	61 $\frac{2}{3}$	67 $\frac{1}{3}$	66 $\frac{1}{3}$	—	64	—	79	—	86	90 $\frac{2}{3}$
Ashton .....	65	67 $\frac{2}{3}$	63 $\frac{2}{3}$	—	—	—	—	—	—	—
Stockport ..	80 $\frac{1}{3}$	91 $\frac{2}{3}$	80	—	—	—	—	—	—	—
Preston ....	—	—	55 1842.	56	54	56	71	71	85	—
Blackburn ..	—	—	55	56	56	60	77	73	87	—
Clitheroe ..	53	—	52	—	51	—	76	—	—	103
Burnley ...	—	—	—	—	—	—	—	—	—	—
Bury and Rochdale }	63	66	63	69 1844.	—	—	—	—	—	—
Scotland .....	65 $\frac{1}{3}$	—	59 $\frac{2}{3}$	60 $\frac{1}{3}$	61	70	72 $\frac{1}{3}$	69 $\frac{2}{3}$	79 $\frac{2}{3}$	86 $\frac{1}{3}$

District.	1871.	1874.	1877.	1880.	1883.	1886.	1891.	1896.	1900.	1906.
Manchester....	92 $\frac{1}{3}$	100	105 $\frac{1}{3}$	97	104 $\frac{1}{3}$	100	—	—	—	112 $\frac{1}{3}$
Bolton .....	93	101	106 $\frac{1}{3}$	101 $\frac{1}{3}$	103 $\frac{2}{3}$	100	110 $\frac{2}{3}$ 1890.	113	119	121 $\frac{1}{3}$
Oldham .....	—	97 $\frac{2}{3}$	101 $\frac{2}{3}$	97 $\frac{2}{3}$	102 $\frac{1}{3}$	100	107	110 $\frac{1}{2}$	116 $\frac{1}{3}$	122
Ashton .....	—	—	—	—	—	100	—	—	—	119 $\frac{1}{3}$
Stockport ..	—	—	—	—	—	100	—	—	—	137 $\frac{2}{3}$
Preston ....	91	97	105	96	100	100	110	109	111	121 $\frac{1}{3}$
Blackburn ...	94	98	105	96	100	100	110	113	119 1901.	124 $\frac{2}{3}$
Clitheroe ...	—	107	108	98	102	100	114	—	123 1902.	131*
Burnley .....	—	—	—	—	—	100	111	—	118 1899	133
Bury and Rochdale }	88	—	—	—	—	100	—	—	—	134 $\frac{1}{2}$
Scotland .....	—	99 $\frac{1}{3}$	—	—	96 $\frac{2}{3}$	100	114 $\frac{1}{3}$	—	—	120 $\frac{1}{3}$

\* 1909, 143.

While this table is before us, we may note the similarity in the course of wages at Bolton and Oldham, and the few numbers we have for Ashton suggest that a complete series for that centre, if we had them, would not differ greatly from these two spinning centres. At Manchester, as would be expected, the course has been peculiar, but not so peculiar as at Stockport, where the relatively small advance between the "thirties" and 1886, and the great advance from that date to 1906, suggests that the year 1886



was abnormal. At Preston and Blackburn the courses have been so much alike that we are able to interpolate missing years in one series from the known figure in the other. At Clitheroe, beginning with very low wages in 1833, we have a greater advance than is found in any other district.

TABLE 36. — *Estimates of average earnings of cotton factory operatives for an ordinary week's work in the chief centres of the industry, 1806-1906.*

(Expressed in pence per week.)

District.	1806.	1810-16.	1817.	1818-20.	1821-22.	1823-25.	1826.	1832-33.
	<i>d.</i>	<i>d.</i>	<i>d.</i>	<i>d.</i>	<i>d.</i>	<i>d.</i>	<i>d.</i>	<i>d.</i>
Manchester .....	131	137	135½	134½	134	126½	127	123

District.	1833.	1836.	1840-41.	1845.	1850.	1855.	1860.	1863.	1866.	1870.
	<i>d.</i>	<i>d.</i>	<i>d.</i>	<i>d.</i>	<i>d.</i>	<i>d.</i>	<i>d.</i>	<i>d.</i>	<i>d.</i>	<i>d.</i>
Manchester ....	123	125	113	129	114	122	124	—	141½	154
Bolton .....	111½	114	117	123	120	127½	146	144	160	—
Oldham .....	127	139	137	—	132	—	163	—	177½	187
Ashton .....	127	132	124	—	—	—	—	—	—	—
Stockport .....	134	153	133	—	—	—	—	—	—	—
Preston .....	—	—	101	102½	99	102½	130	130	156	—
Blackburn.....	—	—	105	107	107	114½	147	139½	166	—
Clitheroe .....	93	—	92	—	89	—	133	—	—	181
Burnley.....	—	—	—	—	—	—	—	—	—	—
Bury and } Rochdale }	110	115	110	120	—	—	—	—	—	—
Scotland .....	96	—	88	102	89	103	108	103	117	—

District.	1871.	1874.	1877.	1880.	1883.	1886.	1891.	1896.	1900.	1906.
	<i>d.</i>	<i>d.</i>	<i>d.</i>	<i>d.</i>	<i>d.</i>	<i>d.</i>	<i>d.</i>	<i>d.</i>	<i>d.</i>	<i>d.</i>
Manchester ....	160	177	182½	168	180½	173½	—	—	—	195
Bolton .....	166	181	190	181	188	179	198	203	213	218
Oldham .....	—	201½	209	201½	210	206	221	228	240	252
Ashton .....	—	—	—	—	—	195	221	—	—	233
Stockport .....	—	—	—	—	—	167	—	—	—	230
Preston .....	166½	177½	192	176	183	183	201	200	203	222
Blackburn.....	180	187	201	183	191	191	210	216	227	248
Clitheroe .....	—	188	189	173	179	176	200	—	217	231
Burnley.....	—	—	—	—	—	214	238	—	253	286
Bury and } Rochdale }	153	—	—	—	—	174	—	—	—	234
Scotland .....	130	146	—	—	142	147	168	—	—	177

When the history of the industry in Scotland is borne in mind, the course of wages there has not differed from that in Lancashire to so great an extent as would, perhaps, be anticipated. From 1833 to 1886 the advance nearly equalled that of the Lancashire spinning centres; from 1870 to 1874 a greater advance is found than in any other place; and from 1886 to 1906 the rate of increase fell in relation to Lancashire, and only equalled two-thirds of the increase of the Lancashire and Cheshire district taken as a whole, though it exceeded that of Manchester and Ashton.

From these index-numbers, with the aid of the Wage Census of 1886 and of 1906, we are able to estimate the average weekly wage per head of all employed in these centres at these dates, and this is the next stage in combining all these figures into an average for the United Kingdom.<sup>2</sup> This is done in Table 36.

This table speaks for itself. The wages are stated in pence per week, and our business is now to combine them into an average for the United Kingdom.

We know from the Wage Census of 1886 that the average for the United Kingdom in that year was 15*s.* 2*d.*, and from that of 1906 that in that year the average was 19*s.* 7*d.* per head of all employed. In 1833, the census taken for the Children's Employment Commission, covering Manchester, Bolton, Oldham, Ashton, and Stockport, showed an average of 10*s.* 5*d.* per head for that district, comprising practically the whole of South Lancashire and Cheshire. In the same year, if what happened on the average at those Lancashire centres for which we have information happened also at Preston, Blackburn, and Clitheroe, the average at these places was rather more in 1833 than in 1840-42. In these years we have estimated in Table 36 that the average wage per head at Preston was 8*s.* 5*d.*, at Blackburn 8*s.* 9*d.*, and at Clitheroe 7*s.* 8*d.* We are probably safe in assuming that the wage at Blackburn may be taken as typical of the average at Bury, Rochdale, Accrington, and Burnley, while Preston adequately represents Chorley, and Clitheroe would be typical of the lower average earned in the North of Lancashire. Roughly weighing these figures in the proportion of Blackburn 50, Preston 20, and Clitheroe 2, which is a quite sufficient relative proportion of their importance, we get as the average for this district (which I will call the North and North-East Lancashire district, to distinguish it from the part covered by the Children's Employment Census, which I will call the South Lancashire and Cheshire district) 8*s.* 8*d.* per head of all employed in 1840-1,

<sup>2</sup> Ireland, which has had a small cotton industry, is omitted from these figures, as the number employed there has always been too small to have any effect on the result.

indicating about 8*s.* 6*d.* in 1833. In Glasgow in 1833, a census given in the Returns of Wages shows an average of 8*s.* per head, and it is not probable that the inclusion of the other Scottish centres, such as Lanark, would materially affect this. In 1835 and 1839, the Factory Inspectors' Returns of Numbers Employed in Cotton Factories showed that about one-seventh of the total number so employed were in Scottish factories, and by the 1851 Census, when the hand-loom weavers had been so reduced in number as to make the census numbers of persons employed in the cotton industry roughly typical of the comparative numbers employed in factories, we find that of 197,000 persons, about 100,000 were employed in towns covered by the 1833 Census (South Lancashire and Cheshire), and 97,000 were in the rest of Lancashire and Cheshire. Between 1833 and 1851, the industry in North and North-East Lancashire had probably grown proportionately more rapidly than in the southern portion, so that if we take for 1833—

North and North-East Lancashire .....	2½
South Lancashire and Cheshire .....	3½
Scotland .....	1
<hr/>	
Total .....	7

as our weights for that year we are probably as near as we need be to the actual truth. In 1886 the Wage Census returns for the centres comprised in these districts were:—

		Average wage.	
		<i>s.</i>	<i>d.</i>
North and North-East Lancashire .....	10½	15	1
South Lancashire and Cheshire .....	7½	15	9
Scotland .....	1	12	3
<hr/>		<hr/>	
Combined .....	19	15	2

and the average for the United Kingdom is not affected by the inclusion of Yorkshire and Derbyshire (other than Glossop, included with Stockport). In 1906 the Wage Census shows:—

		Average wage.	
		<i>s.</i>	<i>d.</i>
All Lancashire and Cheshire .....	22	19	9
Scotland .....	1	14	9
<hr/>		<hr/>	
Combined .....	23	19	6½

while the inclusion of Yorkshire and Derbyshire raises the average for the United Kingdom to 19*s.* 7*d.*

TABLE 37. *Combination of averages estimated separately for South Lancashire and Cheshire, North and North-East Lancashire and Scotland, with resulting estimated average weekly wages per head of all employed as cotton factory operatives in the United Kingdom, 1833-1906.*

Years.	South Lancashire and Cheshire.		North and North-East Lancashire.		Lancashire and Cheshire.		Scotland.		United Kingdom.	
	Average wage per head.	Relative number employed.	Average wage per head.	Relative number employed.	Average wage per head.	Relative number employed.	Average wage per head.	Relative number employed.	Average wage per head.	Index number. (1900 = 100.)
1833 .....	d. 126	14	d. 106	10	d. 117½	24	d. 96	4	d. 114	52
1836 .....	129	15	108	12	120	27	(100)	4	117	53½
1839-41 .....	125	17	104	15	115	32	88	4	112	51
1845 .....	134	18	108	17	121½	35	102	4	119	54½
1849-50 .....	124	20	105	20	114½	40	89	4	110	50½
1855 .....	133	21	111	23	121½	44	103	4	120	54½
1860 .....	146	23	138	26	142	49	103	4	139	63½
1863-64 .....	143	24	135	28	139	52	108	4	136	62
1866 .....	162	25	159	29	160½	54	117	4	157	71½
1871 .....	175	26	176	32	175½	58	130	4	173	79
1874 .....	189	27	185	34	187	61	146	4	184	84½
1877 .....	197	28	194	36	195	64	(147)	4	192	88
1880 .....	186	29	176	38	181	67	(134)	4	178	81½
1883 .....	195	30	183	39	189	69	142	4	186	85
1886 .....	189	31	181	41	184	72	147	4	182	83½
1891 .....	—	—	—	—	206	76	168	4	204	93½
1896 .....	—	—	—	—	210	80	(168)	4	208	95
1900 .....	—	—	—	—	221	84	(172)	4	219	100
1906 .....	—	—	—	—	237	88	177	4	235	107½

To get the intermediate wages and weights from 1833 to 1886, I have taken the variations indicated by the mean index numbers for Oldham, Bolton, and Manchester to represent South Lancashire and Cheshire, of Preston and Blackburn (slightly adjusted to allow for the more rapid rise at Clitheroe in the "seventies") for North and North-East Lancashire, and have assumed that the relative numbers employed have gradually changed from the proportions indicated in 1833 to those indicated by the Wage Census of 1886. From 1886 to 1906 I have taken the wage indicated by the index numbers for the whole of Lancashire and Cheshire and Scotland respectively, and have ignored the distinction between the North and South Lancashire districts, as it ceases to be of any use. The combination of the whole of these figures is shown in Table 37.

Previous to 1833 our only statement other than for the Manchester district is that at Glasgow wages were practically unchanged for many years. The Manchester district figures do not show much change (between 1806 and 1833 a fall of 6 per cent.), and such changes as they do show are gradual. If we assume that the fluctuations in wages at the few mills represented in our Manchester district figures are typical of Lancashire and Cheshire (a fairly safe assumption for these early years when Manchester employed so large a proportion of the total operatives), and that in Scotland, representing roughly  $\frac{1}{4}$ th of the trade (perhaps more in 1806 and less in 1833), wages were unchanged at 8s. per week, we get the following for the period 1806-1833 :—

TABLE 38.  
(In pence per week.)

	Weights.	1806.	1810-16.	1817.	1818-20.	1821-22.	1823-26.	1832-33.
Lancashire and Cheshire .....	6	125	131	129	128	127	121	117
Scotland .....	1	96	96	96	96	96	96	96
United Kingdom.....	7	121	126	125	124	123	118	114
Index number, 1900 = 100 .....	—	75 $\frac{1}{2}$	57 $\frac{1}{2}$	57	56 $\frac{1}{2}$	56	51	52

The accuracy of these figures turns mainly on the correctness of the figure for 1833. We may assume that in 1886 and 1906 the Wage Census Returns were typical, and that in 1833 the Glasgow and South Lancashire and Cheshire figures were also typical. Any error is introduced by the assumption made regarding the Rest of Lancashire. Here we may possibly be 6*d.* per week wrong. If too high by 6*d.* the resulting average for England and Wales is 115 pence instead of the 117 pence shown in Table 38, and for the



United Kingdom 112 pence instead of the 114 there shown. If, on the other hand, the average is understated by 6*d.* the results shown would have to be raised by 2½*d.* for England and Wales and 2*d.* for the United Kingdom. If, as is almost inconceivable, the average for South Lancashire in 1833, namely, 108. 5*d.*, should be correct also for the whole Lancashire and Cheshire area, the United Kingdom average of 98. 6*d.* is too low by 7*d.* On the whole, therefore, we seem quite justified in assuming that our result for 1833 is sound within  $\pm 6$ *d.* per week or approximately  $\pm 5$  per cent.

In the earlier years the error may be larger, but not much, and in the intervening years between 1833 and 1886 the later we get the more accurate our figures become, because the margin between the wages of the Northern and Southern districts becomes less, and the relative numbers employed in Lancashire increase. Further investigation may at some later date result in such additional material as will lead to a modification of these figures, but for the present we are tolerably safe in saying that the average wages of cotton factory operatives in the United Kingdom have advanced by more than 100 per cent. between 1832-1850 and 1906; that between 1810 and 1832 a fall of about 10 per cent. took place; that from the lowest point, which was reached in the great trade depression of 1847-49, to the *maximum* of the "seventies" the advance was about 75 per cent.; that a series of reductions reduced the *maximum* earnings of the "seventies" by about 10 per cent., and that by 1906 the average was not only higher than was ever reached before, but was about 20 per cent. higher than the highest point reached in the "seventies" and about 35 per cent. higher than the lowest point of the previous 30 years (*i.e.*, 1879).

Up to this point we have been considering factory operatives only, but in the early days of the industry the hand-loom weavers working in their own homes were more numerous than the factory workers, and it is necessary to devise some means of combining the information relating to these two groups.

The estimates for hand-loom weavers' wages will be found in Section V dealing with these operatives (*Journal*, April, 1900, p. 433), and they are also given in Table 41 below.

So far we have only arrived at estimates for factory operatives for certain years, generally at intervals of three or five years. These we may call our "pivot" points. Considerable materials relating to intermediate years are to be found in the section dealing with changes in list prices,<sup>3</sup> and in those giving the detailed information for the Manchester, Oldham, Bolton, and Preston and Blackburn

<sup>3</sup> Section I, p. 1 *et seq.*

districts. By their aid we can compute intermediate numbers for practically every year since 1839. These numbers form our final estimate of the course of wages of cotton operatives employed in factories from 1806 to 1909 and are given later in Table 41, where we shall consider them in conjunction with the numbers employed.

*Estimates of numbers employed.*

We have now to combine the index-numbers of factory operatives' wages with those of the home-workers to arrive at final numbers representing the whole trade. In doing this we are limited by the fact that we know nothing regarding the course of wages of the cottage spinners, winders, and warpers dependent on the hand-loom weavers; nor can we do more than conjecture as to their numbers. It must be clearly understood, therefore, that, in what follows, this limitation is involved, and that our final results only refer to the factory operatives *plus* the hand-loom weavers.

For this purpose it is necessary to estimate the numbers employed in each branch at various dates between 1806 and the time when the hand-loom weavers had so dwindled away as to be insignificant in proportion to the growing number of factory employees. Unfortunately our material for this is sadly deficient, and we are able at the best only roughly to approximate. Our main authorities are Ellison,<sup>4</sup> Baines,<sup>5</sup> and the factory inspectors,<sup>6</sup> and the whole matter was reviewed at some length by Porter.<sup>7</sup> Table 39 shows the estimates of these authorities.

With the exception that Baines's figures for 1833 seem too large for the numbers of factory operatives, and that his estimate of the number of hand-loom weavers is the *maximum*, these estimates are quite consistent with each other. They are not, however, quite independent, Ellison relying on Baines and Baines quoting Kennedy with approval for the earlier years, and disagreeing with him as to the power looms in 1829.

Ellison's estimate for 1787 is apparently based on a statement, really for 1788, appearing in the *Manchester Mercury*, April 28, 1788, and probably elsewhere, that 143 mills were erected or in course of erection, two-thirds of which had been erected in 3 years, and that besides there were 20,500 spindles in existence. The estimate appears too high, however, as few factories at that date had so many as 100 employees,<sup>8</sup> and therefore there would not

<sup>4</sup> *The Cotton Trade of Great Britain*, 1886.

<sup>5</sup> *History of the Cotton Manufacture*, 1835.

<sup>6</sup> Returns of numbers employed in factories, 1835.

<sup>7</sup> *Progress of the Nation*, 1847, Chap. II.

<sup>8</sup> Chapman, *The Lancashire Cotton Industry*, p. 58.

TABLE 39. — *Estimates of the numbers employed in various branches of the cotton industry.*

Year.	Authority.	Power-loom weaving.		Factory spinning.	All factory operatives.		Hand-loom weavers.
		Operatives.	Looms.				
1787.....	Ellison .....	—	—	60,000	60,000	—	—
1813.....	Baines .....	—	2,400	—	—	—	—
1815.....	Ellison .....	7,000	—	100,000	107,000	200,000	—
1817.....	Kennedy* .....	—	—	110,700	—	—	—
1819-21 .....	Ellison .....	10,000	—	110,000	—	240,000	—
1820.....	Kennedy* .....	—	14,150	—	—	240,000	—
1823.....	Baines .....	—	Large additions	—	—	—	—
1824-5.....	" .....	—	Larger additions	—	—	—	—
1826-31 .....	" .....	—	Few additions	—	—	—	—
1829.....	Kennedy* .....	—	55,500	—	—	—	—
1829-31 .....	Ellison .....	50,000	—	140,000	190,000	225,000	—
1832.....	Stanway† .....	75,000	—	133,000	205,000	—	—
1832-3-4 .....	Baines .....	—	Enormous increase	—	—	—	—
1833.....	" .....	—	100,000	—	237,000	250,000	—
1833.....	Porter, quoting Witnesses to 1833 Commission .....	—	—	—	—	{ Not less than in 1820, 200,000—250,000	
1835.....	Factory Inspectors .....	—	110,000	—	220,000	—	—
1839.....	" .....	—	—	—	259,000	—	—
1844-6.....	Ellison .....	150,000	—	190,000	340,000	60,000	—
1859-61 .....	" .....	203,000	—	248,000	451,000	5,000—10,000	—

\* Quoted by Porter and Baines, but I have not found the originals.

† Commission on Employment of Children in Factories of 1833. Quoted by Porter.

be, at most, 14,500 operatives employed in them. The addition of 20,000 spinners on hand jennies of 80 spindles each, of which Ellison speaks, may bring the numbers up to his total, but it seems excessive.

The point is not very important, however, as our wages records do not go back so far.

We have no knowledge of the number of hand-loom weavers, other than a statement by Schulze-Gävernitz on the authority of a Committee on Petitions from several Cotton Manufacturers, 1808, that there were then 200,000 (I have not found the original), Kennedy's estimate of 240,000 in 1820, and the general consensus of opinion that they had not diminished by 1833, when they were variously estimated at 200,000 and 250,000. Ellison expressly takes the mean of these numbers for 1829-31 and estimates them at 60,000 in 1844-6 and 5 to 10 thousand in 1859-61. Assuming that they remained unchanged from 1820 to 1831, and that they gradually dwindled away from year to year after until they practically disappear about 1860, we still have to estimate their numbers before 1820.

At that time the power-loom was just beginning to make its influence felt; before that time practically the whole of the vastly increased supply of yarn had to be woven by the hand-loom weavers. As the output per operative employed in spinning increased year by year, the hand-loom weavers would bear no definite proportion to the spinning operatives, and this fact, coupled with the decline of the hand-spinners as the factory operatives increased, makes it impossible for us to assume any connection between the numbers of spinners and the numbers of the weavers using their yarn output. It is absolutely certain, however, that they increased very materially. No improvements of sufficient importance to materially affect the consumption of yarn per loom were made in the hand-loom. Yet the imports of raw cotton averaged in millions of lbs. per annum:—

1781-84 .....	7½	1800-1804 .....	57	1815-1819 .....	129
1785-89 .....	23	1805-1809 .....	66	1820-1824 .....	154
1790-94 .....	30	1810-1814 .....	80	1825-1829 .....	227
1795-99 .....	30				

Up to 1820 this enormous increase must have required more looms to use it; after that date the power-loom may have increased sufficiently to absorb the extra supplies of yarn. If we estimate that increase to have been 4,000 per annum, we get 108,000 in 1787, or not quite twice as many as there were employed in spinning mills. In 1810 we get the 200,000 quoted by Schulze-Gävernitz for 1808. In 1820 we have something over twice as



many hand-loom weavers as spinning employees, and 14,500 power-loom, equal probably to 50,000 hand-loom weavers,<sup>9</sup> in addition. This, in all, is practically 290,000 hand-loom units to 110,000 power-spinning units. These numbers are therefore consistent with a large increase in the number of power-spinners, an enhanced output per spinning operative and a vastly increased consumption of raw material.

Combining the whole of these estimates, carrying on our numbers of factory operatives by means of the Factory Inspectors' Returns, and assuming all increases or decreases to have been uniform and gradual in between years, but making allowance for the inflated growths of 1823-5 and 1832-4, we arrive at the following "weights" for combining the wages of hand-loom weavers to factory operatives.

TABLE 40.—*Estimates of numbers employed in various branches of the cotton trade, 1787-1862.*  
(000's omitted.)

Years.	In factories.			Hand-loom weavers.
	Spinning.	Weaving.	Total.	
1788.....	60	—	60	108
1801.....	83	—	83	164
1806.....	90	few	90	184
1813.....	104	3	107	212
1817.....	111	10	121	228
1820.....	115	11	126	240
1823.....	120	15	135	240
1824.....	122	45	167	240
1825.....	124	49	173	240
1831.....	131	56	187	240
1832.....	132	64	196	227
1833.....	133	75	208	213
1835.....	—	—	220	188
1839.....	—	—	259	135
1847.....	—	—	277	53
1850.....	—	—	331	40
1856.....	—	—	379	23
1862.....	—	—	452	3

In criticising these numbers it should be borne in mind that they are not intended so much for definite estimates of the numbers employed in the cotton industry as for proportions between factory

<sup>9</sup> Baines says that a hand-loom weaver would weave two pieces of shirting a week; that in 1823 a steam-loom weaver on two looms would weave seven similar pieces; in 1826, on four looms with a tenter, 12 to 15 similar pieces; and in 1833, on four looms with a tenter, 18 to 20 similar pieces. A power loom was, therefore, equal to three and a half hand-loom in 1823-26, and four and a half in 1833.



workers and hand-loom weavers. No account is taken, for instance, of the numbers employed at hand spinning in the early years, or of the winders and warpers for the hand-loom, about whom we know very little. Dyeing and printing is not included, as this should be treated as a separate industry.

We have now arrived at the outline of our estimate of the course of wages of all cotton operatives, and it only remains to fill in the details. This is done in Table 41, where are shown the variations in wages of both factory operatives and hand-loom weavers from 1806 to 1862, and the estimated changes in the final averages of all combined, when allowance is made for the annually changing proportions of factory and non-factory workers. Certain figures are given in italics, indicating that these rest on less sufficient evidence than the rest of our numbers.

When the results shown in Columns 7 and 8 were calculated, they seemed so extraordinary that I felt inclined to reject them altogether. It certainly needs very sound evidence to substantiate a conclusion which shows that the wages of all persons employed in the industry were as high in 1806 as in 1890,<sup>10</sup> that a reduction of over 50 per cent. took place in so short a space as 25 years, and that in the space of 75 years (1831-1906), an advance of 160 per cent. took place. We need therefore to consider the possible sources of error at the weakest places. These appear to be 1806, and about 1831, namely, the highest and lowest points. Of these, we may easily satisfy ourselves about 1831. Our figures show very little variation between 1830 and 1833, and in the latter year we have abundance of evidence. Our table shows an average wage of 9s. 6d. for 208,000 factory operatives in 1833, and of this we are only in doubt respecting a small part, the main basis of the figures being in fact a very wide census. The 208,000 taken as the number employed in factories may have been more or less, but not by many either way. Neither, as we have seen, is the average wage open to much doubt. We have, indeed, found that at the utmost it cannot be more than 7d. wrong, and is probably within 2d. For the hand-loom weavers we have an average of 6s. for 240,000 in 1831, and 213,000 in 1833. The wage is attested by scores of witnesses to the Committee of 1835 and Commission of 1838-40 ;

<sup>10</sup> This is not a strictly accurate description of the change, as of course the winders for the hand-loom are not included; neither are the cottage spinners. Their inclusion would reduce the average, as they certainly earned much less than the weavers. As we know practically nothing about them, I have been forced to ignore them. It may be noticed, however, that if there was one winder in 1806 for every six hand-loom weavers, and she earned 7s. a week, the average wage of factory operatives, hand-loom weavers and winders combined, becomes 17s. 2d. instead of the 15s. 8d. shown in Col. 7. This margin of 1s. 2d. becomes less every year after

TABLE 41.—Changes in average wages and numbers employed of cotton operatives employed in factories and as hand-loom weavers from 1806 to 1862, and in the average wages of cotton factory operatives from 1863 to 1909, with the final average for all these workpeople when allowance is made for the changing numbers employed.

Years.	Operatives in factories.			Hand-loom weavers.		All workpeople.		
	1. Number em- ployed.	2. We kly wage.	3. Col. 2 as per- centage of 1900.	4. Number em- ployed.	5. Weekly wage.	6. Number em- ployed.	7. Weekly wage.	8. Col. 7 as per- centage of 1900.
	000's.	d.		000's.	d.	000's.	d.	
1806.....	90	121	55 $\frac{1}{3}$	184	240	274	200	91 $\frac{1}{2}$
1807.....	93	122	—	188	207	281	178	81 $\frac{1}{2}$
1808.....	95	123	—	192	159	287	147	67
1809.....	97	124	—	196	163	293	153	70
1810.....	100	126	57 $\frac{2}{3}$	200	171	300	156	71 $\frac{1}{3}$
1811.....	102	126	57 $\frac{2}{3}$	204	147	306	140	64
1812.....	105	126	57 $\frac{2}{3}$	208	168	313	154	70 $\frac{2}{3}$
1813.....	107	126	57 $\frac{2}{3}$	212	180	319	162	74
1814.....	110	126	57 $\frac{2}{3}$	216	222	326	189	86 $\frac{1}{2}$
1815.....	114	126	57 $\frac{2}{3}$	220	162	334	150	68 $\frac{1}{2}$
1816.....	117	126	57 $\frac{2}{3}$	224	123	341	124	56 $\frac{2}{3}$
1817.....	121	125	57	228	105	349	112	51
1818.....	123	124	56 $\frac{2}{3}$	232	99	354	103	49 $\frac{1}{3}$
1819.....	125	124	56 $\frac{2}{3}$	236	99	361	108	49 $\frac{1}{3}$
1820.....	126	124	56 $\frac{2}{3}$	240	99	366	103	49 $\frac{1}{3}$
1821.....	129	123	56	240	99	369	107	49
1822.....	132	123	56	240	99	372	107	49
1823.....	135	118	54	240	99	375	106	48 $\frac{1}{3}$
1824.....	167	118	54	240	99	407	107	49
1825.....	173	118	54	240	99	413	107	49
1826.....	175	118	54	240	93	415	103	47
1827.....	177	118	—	240	90	417	102	46 $\frac{2}{3}$
1828.....	180	117	—	240	87	420	100	45 $\frac{2}{3}$
1829.....	182	116	—	240	87	422	99	45 $\frac{1}{3}$
1830.....	185	115	—	240	75	425	92	42
1831.....	187	114	—	240	72	427	90	41
1832.....	196	114	52	227	72	423	91	41 $\frac{2}{3}$
1833.....	208	114	52	213	72	421	93	42 $\frac{1}{3}$
1834.....	215	115	—	200	84	415	100	45 $\frac{2}{3}$
1835.....	220	116	—	188	75	408	96	43 $\frac{2}{3}$
1836.....	230	117	53 $\frac{1}{3}$	174	75	404	98	44 $\frac{2}{3}$
1837.....	240	117	—	160	75	400	99	45 $\frac{1}{3}$
1838.....	250	116	—	147	75	397	100	45 $\frac{2}{3}$
1839.....	259	112	51	135	75	394	99	45 $\frac{1}{3}$
1840.....	262	112	51	123	75	385	100	45 $\frac{2}{3}$
1841.....	264	113	51 $\frac{1}{3}$	110	75	374	102	46 $\frac{2}{3}$
1842.....	267	113	51 $\frac{1}{3}$	97	75	364	103	47
1843.....	269	110	50 $\frac{2}{3}$	85	75	354	102	46 $\frac{2}{3}$
1844.....	271	113	51 $\frac{1}{2}$	72	75	343	105	48
1845.....	273	119	54 $\frac{1}{3}$	60	75	333	111	50 $\frac{2}{3}$
1846.....	275	119	54 $\frac{1}{3}$	57	75	332	111	50 $\frac{2}{3}$
1847.....	277	110	—	53	75	330	104	47 $\frac{1}{3}$
1848.....	295	110	—	50	75	345	104	47 $\frac{1}{3}$
1849.....	313	110	50 $\frac{1}{3}$	47	75	350	105	48

TABLE 41 *contd.*—*Changes in average wages and numbers employed of cotton operatives, &c.*

Years.	Operatives in factories.			Hand-loom weavers.		All workpeople.		
	1. Number em- ployed.	2. Weekly wage.	3. Col. 2 as per- centage of 1900.	4. Number em- ployed.	5. Weekly wage.	6. Number em- ployed.	7. Weekly wage.	8. Col. 7 as per- centage of 1900.
	000's.	d.		000's.	d.	000's.	d.	
1850.....	331	110	50 $\frac{1}{3}$	43	75	374	106	48 $\frac{1}{3}$
1851.....	339	112	51	40	75	379	108	49 $\frac{1}{3}$
1852.....	347	114	52	37	75	384	110	50 $\frac{1}{3}$
1853.....	355	120	54 $\frac{2}{3}$	33	75	388	116	53
1854.....	363	118	54	30	75	393	115	52 $\frac{2}{3}$
1855.....	371	120	54 $\frac{2}{3}$	27	75	398	117	53 $\frac{1}{3}$
1856.....	379	126	57 $\frac{1}{2}$	23	75	402	123	56 $\frac{1}{3}$
1857.....	391	127	58	20	75	418	124	56 $\frac{2}{3}$
1858.....	403	127	58 $\frac{1}{3}$	17	75	420	125	57
1859.....	415	131	60	13	75	428	129	59
1860.....	427	139	63 $\frac{2}{3}$	10	75	437	138	63
1861.....	439	139	63 $\frac{2}{3}$	7	75	446	138	63
1862.....	452	137	62 $\frac{1}{3}$	3	75	455	137	62 $\frac{2}{3}$

*All workpeople.*

Year.	Number.	Weekly wage.	Per- centage of 1900.	Year.	Number.	Weekly wage.	Per- centage of 1900.
	000's.	d.			000's.	d.	
1863.....	—	136	62	1885.....	504	184	84
1864.....	—	136	62	1886.....	—	182	83 $\frac{1}{3}$
1865.....	—	144	66	1887.....	—	185	84 $\frac{2}{3}$
1866.....	—	157	71 $\frac{2}{3}$	1888.....	—	192	87 $\frac{2}{3}$
1867.....	—	158	72 $\frac{1}{3}$	1889.....	—	194	88 $\frac{2}{3}$
1868.....	—	162	74	1890.....	529	197	90 $\frac{1}{3}$
1869.....	—	159	72 $\frac{2}{3}$	1891.....	—	204	93 $\frac{1}{3}$
1870.....	450	165	75 $\frac{1}{2}$	1892.....	—	207	94 $\frac{1}{3}$
1871.....	—	173	79	1893.....	—	206	94
1872.....	—	178	81 $\frac{1}{2}$	1894.....	—	206	94
1873.....	—	181	83	1895.....	539	206	94 $\frac{1}{3}$
1874.....	450	184	84 $\frac{1}{3}$	1896.....	—	208	95
1875.....	—	184	84 $\frac{1}{3}$	1897.....	—	209	95 $\frac{2}{3}$
1876.....	—	187	85 $\frac{2}{3}$	1898.....	—	211	96 $\frac{1}{3}$
1877.....	—	192	88	1899.....	—	214	97 $\frac{2}{3}$
1878.....	493	179	82	1900.....	—	219	100
1879.....	—	172	78 $\frac{1}{3}$	1901.....	523	220	100 $\frac{2}{3}$
1880.....	—	178	81 $\frac{1}{3}$	1902.....	—	219	100
1881.....	—	183	83 $\frac{1}{2}$	1903.....	—	218	99 $\frac{1}{3}$
1882.....	—	184	84	1904.....	523	220	100 $\frac{2}{3}$
1883.....	—	186	85	1905.....	—	226	103 $\frac{1}{3}$
1884.....	—	187	85 $\frac{1}{3}$	1906.....	—	235	107 $\frac{1}{3}$

*Note.*—The percentages of 1900 are given to the nearest one-third, not as a pretence to accuracy, but for convenience in re-converting them to terms of any other year at any time.

while the number is between the 200,000 and 250,000 estimated by contemporary witnesses. Assuming that the average wage of both factory operatives and hand-loom weavers may be wrong by 6*d.*, and taking the number of hand-loom weavers at 200,000 to 250,000, their wages at either 5*s.* 6*d.* or 6*s.* 6*d.*, and the number of factory operatives at 185,000 to 210,000, and their wages at 9*s.* to 10*s.*, the result which we have arrived at, namely, 90 pence in 1831, 91 pence in 1832, and 93 pence in 1833, is well within the limits of 85 to 99 pence which these variations yield.

In 1806 the case is different. Here we have assumed rather more, and cannot pretend that our result is so accurate. Our wages for factory operatives depend on an assumption for one-seventh; our numbers are entirely assumed; our wages for hand-loom weavers are not based on so much evidence; they are further open to the suspicion that in making retrospective statements the most favourable aspects would be the most likely to be brought out; and our numbers are also little better than conjecture. The question is whether the result for 1806 is too high. In the first place our number employed in factories, while it agrees with the known facts, may be, say, within 10,000. The average wage, for factory operatives, may be 1*d.* higher if the course of wages at Manchester indicates the course at Glasgow, and wages there, in 1806, were 8*s.* 6*d.* per week instead of 8*s.*, and perhaps 3*d.* higher if the North and North-East Lancashire district wage as estimated for 1833 is too low. It is possible, therefore, that our 1806 wage for factory operatives is too low by 4*d.*, but scarcely probable that it is too high. The numbers of hand-loom weavers, estimated at 184,000, can scarcely be more than 6,000 too few, or we get too little increase between 1806 and the time when the power loom came in in sufficient numbers to appreciably affect the consumption of yarn, the supply of which increased annually. It may, however, be too high, possibly by 20,000. Their wages, again, may be wide of the mark, but in view of the careful summary of the Committee of 1835, quoted in Section IV (*Journal*, April, 1910, p. 434), we are quite justified in believing that they cannot have been below 18*s.* On the other hand, they may have been higher. At Bolton we have as the earnings in that year, for various work, 22*s.*, 21*s.*, and 21*s.*, at Wigton 22*s.*, at Glasgow 17*s.* 8*d.* and 32*s.* 6*d.* Wages had fallen by 1810, yet even in that year we have 16*s.* 3*d.*, 16*s.* 10½*d.*, 14*s.*, 16*s.* 5½*d.*, 17*s.* 2*d.*, and 21*s.* as wages on various goods at Manchester, and 17*s.* to 24*s.* 6*d.*, and 13*s.* 6*d.* to 17*s.* 2*d.* at Glasgow. Our 20*s.* in 1806 might therefore even be as high as 24*s.* Hence, our range in that year includes the variations between—

80,000 to 100,000 factory operatives at 9*s.* 6*d.* to 10*s.* 6*d.*

165,000 to 190,000 hand-loom weavers at 18*s.* to 24*s.*



namely, from 14s. 9d. to 20s. compared with the 16s. 8d. which we have estimated. In 1806, therefore, our final average weekly wage may be 2s. too high or 3s. 8d. too low, and our index number, compared with 1900, may be 81 or 110 instead of 91. In any case the result substantiates the conclusion that very high wages were obtained in the very early years of the century, and that a great and rapid fall took place for 25 years, and that the high average of 1806 was not again attained until the "seventies," and probably not until the "nineties."

In each year after 1806 our error becomes less until 1816, when it is at its *minimum*: it increases after to 1831, when it reaches a second *maximum*; and then decreases as the hand-loom workers fall out, until in the "sixties" it comes within negligible limits.

The course of wages of each section and of all combined is illustrated by the diagram.

Assuming that our result is sufficiently correct for all practical purposes, and summarising it in periods as follows:—

		Factory operatives.	Hand-loom weavers.	All workpeople.
<i>Maximum</i> .....	1806—1809	122	193	170
Falling .....	1810—1819	126	148	149
Falling .....	1820—1829	119	95	105
Falling .....	1830—1839	115	75	96
<i>Minimum</i> .....	1830—1833	—	—	92
Little change .....	1840—1849	114	75	106
Factory <i>minimum</i> .....	1847—1850	110	75	105
Rising .....	1850—1859	121	75	118
Rising .....	1860—1869	147	—	147
Rise and fall .....	1870—1879	189	—	180
<i>Maximum</i> .....	1874—1877	187	—	187
<i>Minimum</i> ..	1878—1881	176	—	176
Recovery ..	1880—1889	185	—	185
Slowly rising .....	1890—1899	207	—	207
Quick rise .....	1900—1906	222	—	222

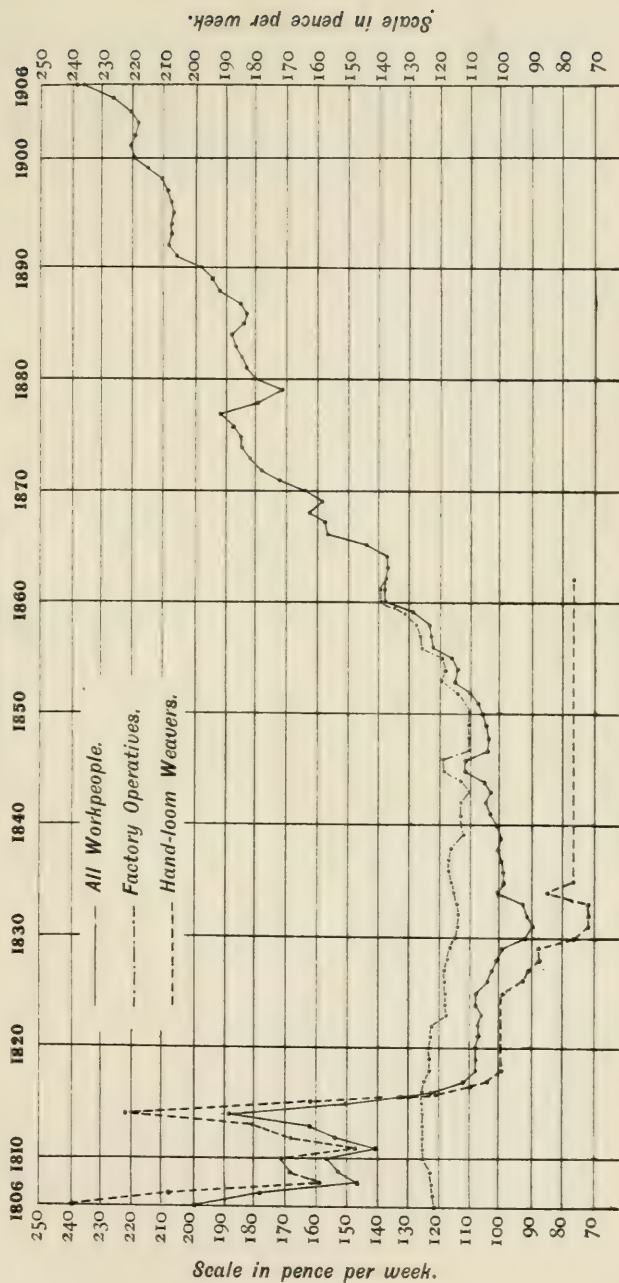
we find that wages have almost steadily advanced for over seventy years and that they now are at least double what they were in the middle of the nineteenth century.

*How various classes of operatives have shared this advance.*

There are so many different occupations in the cotton industry that it cannot be expected that all will have shared alike in this



DIAGRAM ILLUSTRATING THE COURSE OF AVERAGE WAGES OF COTTON OPERATIVES,  
1806 TO 1906.





advance in wages. The changes in different occupations are interesting in themselves; they also help to indicate where the factors making for improvement have been most operative.

We cannot, however, trace the changes in the occupations as accurately as we can trace the changes in the industry as a whole. In the larger calculation, the errors have room to balance one another. For each occupation taken separately, the material is often lacking in completeness. Nevertheless we can get fairly close so far as the Lancashire and Cheshire area is concerned. In Table 42 are given the estimated average earnings for such types of operatives as the most reliable and complete information can be obtained for. No pretence is made to close accuracy: the results are stated to the nearest 3*d*. per week, except in the Census years; and only intermediate years are taken. We cannot pretend to take this back earlier than 1833.

TABLE 42.—*Estimated average weekly earnings of various classes of cotton operatives in Lancashire and Cheshire, 1833-1906.*

	1833.	1840.	1850.	1860.	1871.	1874.
Blow, &c, room women .....	7 -	7/-	7 6	8/-	12/-	12/-
Strippers and grinders .....	14 6	13/-	12 9	14/9	21/-	23/-
Draw frame tenters .....	7/6	7/6	7/-	8/-	12/9	14/6
Slubber „ „ .....	7/6	8/-	8 6	9 -	14/9	15/6
Rover „ „ .....	8/-	8/-	8/6	10/6	15/6	16/-
Throstle and ring spinners....	7/9	8/-	7/6	9/-	12/-	13/-
Self-actor spinners .....	25/9	22 6	21/9	24/3	3 -	33/-
„ big piecers .....	9 -	10/-	8 9	10/-	12/-	14/-
„ little piecers .....	3/6	5/-	5/6	6/6	7 -	8 6
Winders .....	9/6	9/-	8/6	10/-	13/-	13/9
Reelers .....	10/-	9/-	9/-	9/6	13/-	13/-
Warpers .....	11/-	9/-	11/-	11 6	14/-	15/-
Weavers .....	11/-	10/6	11/-	12/6	14/-	15/-
Dressers and sizers „ „ .....	27/9	26/-	25/-	25/-	30/-	37/-
Weavers' helpers.....	5/-	5/-	5/-	5/-	5/-	5/3
<hr/>						
	1877.	1880.	1883.	1891.	1900.	1906.
Blow, &c., room women .....	14/3	13/-	11/10	13/-	13 9	14/3
Strippers and grinders .....	22/-	21/6	20/4	26/6	28/6	29/5
Draw frame tenters.....	16/-	14/6	14/9	18/6	19/6	20/-
Slubber „ „ .....	17/-	15/-	15/4	18/-	19/-	19/6
Rover „ „ „ .....	17/-	15/-	15/4	18/-	19/-	19/3
Throstle and ring spinners...	13/6	12/-	12 6	14/-	15/-	15/7
Self actor spinners .....	34/-	31/-	31/3	36/-	39/-	41 5
„ big piecers .....	14/-	14 -	14/1	15/3	16/9	17/10
„ little piecers .....	8 6	9/-	9 9	10/6	11 3	12/-
Winders .....	14/-	13/-	13/-	14/-	14/6	15/3
Reelers .....	13/-	13/6	13 -	13/-	13/6	13/10
Warpers .....	17/-	16/-	18/2	18/9	20/-	21 1
Weavers .....	17/-	16/-	17/1	17/11	19/-	20/6
Dressers and sizers .....	40/-	35/-	35/2	36/-	37/-	40/-
Weavers' helpers.....	5/6	5/3	5/3	5/9	6/-	6/3

All classes will be seen to have shared in the advance, but the weavers' helpers have shared least. Their compensation is that they do not remain helpers very long, but become weavers themselves. Since 1850 the frame-tenters' wages have increased by well over 100 per cent. (drawing-frame tenders' wages have increased by nearly 200 per cent.), and so have those of strippers and grinders, piecers, and ring spinners. Reelers have only risen by about 50 per cent., but winders, warpers and weavers have increased by 80 to 90 per cent.

*Influences affecting average wages.*

There are four chief causes of change in the average wage in an ordinary week of all employed, and it is interesting and instructive to examine the growth of wages in the cotton industry, and try and separate these influences. The four causes are :—

- (a) Advances or reductions in piece prices or time-work rates ;
- (b) Changes in hours of labour :
- (c) Changes in the proportions of skilled and unskilled, the distribution of occupations, or the relative numbers of men, women, boys, and girls ; and
- (d) Changes in the efficiency of operative or machine.

We cannot expect to state exactly what proportions of the change in the average over a particular period are due to any of these causes, but we can make some close approximations.

In Section I<sup>11</sup> will be found an account of the changes in the levels of piece prices under certain well-known "lists" which now practically govern the trade, and of the changes in time rates for certain classes of operatives at two mills. It is almost impossible to combine these records, and say that wage rates are definitely 5, 10, or 15 per cent. above or below what they were in 1860 or 1870. The levels of list prices in 1860 and 1906 were :—

TABLE 43.

	1860.	1906.
Weaving list	105	100
Obham spinning	(90 ?)	105
„ male card-room ....	90 ?	120 ?
Preston spinning .....	107½	112½
Bolton	105	105
„ card-room	105	110
„ male card-room	105	125
Ashton spinning	100	110

<sup>11</sup> Table I. pp. 3 and 4.

The three query marks indicate that these are the probable levels, but that the records are incomplete.

The indications are that, taking into account the relative numbers employed in the spinning and weaving branches, and the various adjustments of prices to new conditions, payments for extras previously not paid for, &c., the average rate of payment in 1906 was about 5 or  $7\frac{1}{2}$  per cent. above that of 1860. This advance does not seem very great when we remember that the average wage of all employed has advanced by 69 per cent. We shall be fairly within the mark if we estimate it at  $7\frac{1}{2}$  per cent., or 10*d.* per head.

*The effects of legal reductions of hours on wages.*

The question of the effects of factory legislation on the cotton industry has already been discussed by me in the Society's *Journal*,<sup>12</sup> and it is not my present purpose to go over the ground again. In making investigations for the present paper, however, I have acquired some further information, and it will not be out of place if it is briefly considered here. We need only refer to the effect of reductions of hours on wages, and can say little about that of 1847, except that our index-numbers show the average wage for factory operatives to have been:—

	<i>d.</i>		<i>d.</i>
1844 .....	113	1849 .....	112
1845 .....	119	1850 .....	112
1846 .....	119	1851 .....	113

substantiating the conclusions arrived at in 1902 that the "Ten Hours Act" was accompanied by a reduction of wages, but not by any means *pro rata* with the reduced hours (69 to 60). In a large mill in the North and North-East Lancashire district, time workers were reduced *pro rata* with the reduced hours, but piece workers generally made up their former earnings without any advance in piece rates, as soon as trade, which was very depressed in 1847 and 1848, revived.

In 1875 the hours were reduced from 60 to  $56\frac{1}{2}$  per week. Generally speaking, the time workers had their former wages paid for the shorter hours.<sup>13</sup> Our index-numbers for this period indicate

<sup>12</sup> "Factory Legislation Considered, &c.," by George H. Wood, *Journal of the Royal Statistical Society*, June, 1902.

<sup>13</sup> *E.g.*, the Blackburn employers resolved to make a *pro rata* reduction for time workers, but failed; and the Oldham employers resolved to pay the former rates to all datal hands. The piecers generally succeeded in obtaining the 60 hours' rate for  $56\frac{1}{2}$  hours. See Section II, Oldham and District, *Journal*, February, 1909, p. 158.



the following average earnings per head in pence, during the 3 years before and after the change in hours:—

1872.....	178		1874.....	184		1876....	187
1873.....	181		1875.....	184		1877.....	192

It will be seen that as wages were rising throughout the period of 6 years, the reduction of hours arrested the advance for 1 year.

The manager of a large spinning mill informs me that while they made no change in weekly rates for dotal operatives, and no change in piece rates, their average earnings fell 7 per cent. between the period preceding the reduction of hours on January 1, 1875, and the middle of the year. The previous hours had been 59. Here the reduction in hours brought a definite decrease in earnings. By 1876, however, the average was higher than ever before, and again no changes in rates had taken place.

In a large weaving establishment which we are unable to identify, but for which we have full particulars from an "average" book, the following were the average earnings for four full weeks in November-December, 1874, and four full weeks January-February, 1875:—

TABLE 44.

	1874. Nov. Dec.	1875. Jan.-Feb.	Percentage change.	1875. Sept. Oct.
Winders .....	12/3	12/0·8	-1·4	12/4
Warpers .....	17/1	16·5·4	-3·6	16/10
Dressers .....	34·3·7	32·8·25	-4·7	33·2½
Twisters-in .....	14·9·2	14·3	-3·4	15/-
Drawers-in .....	18·9·3	17·9·9	-5·0	17·9½
Weavers, per loom ...	6,1·18	5·9·01	-5·9	5·8·44

Here the reduction of hours would presumably have been, as was general in the weaving districts, from 60 to 56½, *i.e.*, 5·83 per cent.

All these operatives are piece workers. In the case of the weavers the reduction in earnings was almost exactly equal to the reduction in hours. In the other cases it was less, until in the case of the winders it was about one-fourth of the reduction in hours. As would perhaps be expected, the least reduction came where there was least machine-regularity and most could be gained by personal application. With the weaver the loom, being quite constant in its running, would probably have to be speeded before the effect of the reduction of hours could be regained. With the others there is a margin of personal activity which increases through the processes, and is greatest with the twisters-in and

winders. In each case, however, the reduction of hours brought a reduction of earnings, and in each case the reduction was regained before two years had passed.

This is quite confirmatory of the conclusions arrived at in my earlier paper, namely, that the limitation of the hours of labour, both in 1847 and in 1875, probably caused an immediate, but not *pro rata*, reduction in earnings, that the reduction so caused was made up within a very short period, and that the limitation did not prevent wages from soon attaining a distinctly higher level than had been attained under similar conditions of prosperity previous to the reduction of hours. We cannot say that an advance in earnings followed because of the reduction of hours, but we have as yet failed to find a case where reduction of hours has not been followed in a very few years by higher earnings for the less hours than were formerly obtained in the longer working week.

The Act of 1901, which again reduced the hours, this time from  $56\frac{1}{2}$  to  $55\frac{1}{2}$ , apparently failed to have any perceptible effect on earnings. As one manager put it to me, "We had a whip-up and were more stringent as to the cleaning time." This probably happened in most cases. The falling off in trade which came in 1902, though not great, obscures the question too much for any fine measurement of the effect of reducing the working week by less than 2 per cent., and we should require an investigation into a number of cases with full knowledge as to the state of trade in each mill before we could be sure of any conclusion on the matter.

We thus arrive at the negative conclusion that reductions in hours of labour have not prevented wages from rising. We may, therefore, ignore the question which is naturally raised in considering the causes of the advance, namely, "How much higher would wages have been if the old hours had been continued?" We have no evidence that they would have been any higher. The operatives have soon earned as much in the short week as in the previous long one, because they have drawn on their "reserves of personal efficiency" and the organisation of the work has been improved and the machines speeded.

#### *Increment due to changes in "personnel."*

Taking next the changes in the *personnel* it will be convenient to trace these at different periods. From the Factory Inspectors' returns we find the proportionate numbers of children, young persons, and adults to have been:—

TABLE 45.

	1835.	1850.	1862.	1868.	1874.	1878.
	per cent.	per cent.	per cent.	per cent.	per cent.	per cent.
Children, —13 .....	13·1	4·5	8·8	10·3	13·9	12·8
Male, 13—18 .....	12·4	11·2	9·1	8·5	8·3	7·2
Male, + 18 .....	26·4	28·8	26·4	26·1	24·1	25·1
Female, + 13 .....	48·1	55·6	55·7	55·1	53·7	51·9

	1885.	1890.	1895.	1901.	1904.	1907.
	per cent.	per cent.	per cent.	per cent.	per cent.	per cent.
Children, —13 .....	9·9	9·1	5·8	4·0	3·4	3·2
Male, 13—18 .....	8·0	8·2	7·8	7·1	7·1	7·9
Male, + 18 .....	26·1	26·8	27·6	28·1	28·9	28·3
Female, + 13 .....	56·0	55·9	58·8	60·8	60·6	60·6

From this we see that some extraordinary changes have taken place. The continuous diminution in the employment of children and lads and the successively increasing employment of women and girls without reducing the proportion of men, but indeed tending to increase it, would of itself raise the average wage of all considered together.

The division of ages adopted in the Wage Census is not quite the same as that of the Factory Inspectors' returns, the Census age for adult males being 20 years and the Factory Inspectors' only those of 18 years and up. To balance matters I have taken all the big piecers and male 4-loom weavers in the Wage Census from the "boys" and included them with the "men." This gives the following:—

TABLE 46.

	Factory Inspectors' Returns.			Wage Census, 1906.	
	1835. Per cent.	1862. Per cent.	1907. Per cent.	Wage.	Per cent.
Men .....	26·4	26·4	28·3	28/9	30·2
Lads and boys .....	12·4	9·1	7·9	11/7	8·7
"    half-timers .....	6·9	4·9	1·5	3/6	1·5
Women .....	30·8	(39·0)	45·7	18/8	44·5
Girls .....	17·3	(16·7)	14·9	11/6	13·5
"    half-timers .....	6·2	3·9	1·7	3/6	1·6
Average wage in 1906 if employed in the proportions stated .....	17·2	18·	19/6	—	19·7

The proportions for women and girls in 1862 have been interpolated on the basis of a nearly uniform rate of change between 1847

and 1907. The actual numbers are not given by the Factory Inspectors. The Wage Census average in 1906 comes out a trifle too high, as slightly too large a proportion of men were returned. If the proportions of men, women, lads, girls, and half-timers had been returned as the 1907 Factory Inspectors' return shows to have been employed in that year, the average wage would have been 19s. 6d. If, however, the proportions had been the same as those of the Factory Inspectors' returns of 1835, the average wage would only have been 17s. 2d., and if the proportions had been as in 1862, the average would have been 18s. Thus we find an advance of 2s. 4d. in 61 years, due to changes in the *personnel*. Most of this is obviously caused by the reduction of the half-timers.

Even between 1886 and 1906 the advance due to the reduction of half-timers is quite marked. If we take the average wage of full-timers only according to the numbers returned at each Wage Census, the advance is from 16s. 4d. to 20s. 2d., or by 24 per cent.; and if we take the 1886 numbers and apply them to the 1906 wages, we get 19s. 11d. as the average wage, and 22 per cent. as the advance. In 20 years, therefore, the average of full-timers has advanced by alterations in the proportionate numbers employed by about 3d. per week, or 2 per cent. This is almost negligible. Including the half-timers, we get the following details:—

TABLE 47.

	1883.		1906.		Advance 1886—1906
	Per cent.	Wage.	Per cent.	Wage.	
Men*	26·3	23/7	30·9	28/10	+ 5/3
Lads and boys, full-timers	9·1	9/11	9·4	12/-	+ 2/1
„ half-timers	3·8	2/11	1·6	3·6	+ 7d.
Women	44·4	15/3	43·0	18/8	+ 3·5
Girls	11·2	8/9	13·4	11/-	+ 2/3
„ half-timers	5·2	2·8	1·7	3/-	+ 4d.
	100·0	15/2	100·0	19/7	+ 4·5
Average with 1883 numbers and 1906 wages	} — —		— 18/6		+ 3·4

\* Including lads and boys, big piecers, but not lads and boys, four-loom weavers.

Between 1886 and 1906, therefore, the reduction in the proportion of half-timers has caused an advance in average wages per head of 10d. per week, and the changes in the proportion of men, women, lads, and girls full-timers 3d. per week.

It is interesting to trace the effects of the changing proportions



of full-timers over a longer period. The Factory Inspectors' Returns do not show the women over 18 years and girls under that age separately, as a rule, and we are confined to certain periods. Taking the returns for 1835, 1839, 1847, and 1907, and interpolating as above for women and girls in 1862, we get the following (still classifying lads and boys, big-piecers, and four-loom weavers as "men," to bring the Wage Census nearer into harmony with the Factory Inspectors' classification) :—

TABLE 48.—*Full time workers only.*

	Factory Inspectors' Returns.					1906, Wage Census.	
	1835. Percent.	1839. Percent.	1847. Percent.	1862. Percent.	1907. Percent.	Percent.	Wages.
Lads and boys .....	14.3	16.7	12.6	10.0	8.2	9.9	11/7
Men .....	30.4	26.1	28.7	28.9	29.2	31.2	28/9
Girls .....	19.9	23.0	19.3	(19.3)	15.3	13.9	11/-
Women .....	35.4	34.2	39.4	(42.8)	47.3	45.9	18/8
Wage in 1906 at above propor- tions .....	19.2	18.4	19.2	19/5	19/10	20.2	—

The Wage Census has, as we have seen, too many adults and not enough boys and girls.

The advance in average earnings of full-timers due to the decreasing employment of boys and girls is 1s. 6d. since 1839, and 8d. since 1835, a change in four years due to the reductions of half-timers and children under 13 years of age which took place in these four years. From 1862 to 1907 the advance from this cause is only 5d.

We thus find that between 1860 and 1906 the average had advanced by 1s. 6d. through the changed proportions of children, young persons, and adults, and that of this advance 5d. is due to changes between young persons and adults, and 1s. 1d. is due to the lessened proportion of children (half-timers).

We can do but very little with the effects of changes in the various occupations owing to want of definite material. The changes from 1886 to 1906, as shown by the Wage Censuses, are illustrated for Lancashire and Cheshire in the table given in the Appendix.

*Increment due to improved machinery and greater personal efficiency.*

Here we are on more difficult ground. We cannot separate the improvement in the machine from the improvement in the work man. But, after deducting the advances due to definite increases in



wage-rates and to the changes in *personnel*, the residuum of increase is due to the combination of improved machine and greater personal efficiency.

Neither can we trace this movement back very far. We do not know the relative levels of wage-rates before the adoption of the various Standard lists. It is, however, sufficient for all practical purposes to go back to 1860. Between that date and 1906, the average wage of all employed has advanced from 11s. 7d. to 19s. 7d., or by 69 per cent. Of this advance, about 7 per cent. (or 10d.) is due to increased rates of pay, and about 13 per cent. (or 1s. 6d.) is due to the employment of relatively more adults and less children. The remaining 49 per cent. (or 5s. 8d.) is due, therefore, to increased efficiency of operative and machine.

*How improved efficiency has been brought about.*

It will not be found unprofitable to consider this increase of efficiency as we find it in the various departments of the mill.

Commencing in the cardroom, we find the grinder of to-day practically a skilled operative. On the average he has 14 cards to take care of. The cards are entirely different from those of half-a-century ago; but in a mill where to-day two grinders do the whole of the work, forty to fifty years ago, under the old carding system, about eight or 10 strippers and grinders would have been employed. Here both operative and machine have improved considerably.

In the frames (drawing, slubbing, intermediate, and roving) a large development has taken place, although it is difficult to give exact details. Payment by piece rates has now almost superseded payment by time rates, and the rates are so fixed that an increase in the number of spindles in the frame brings an increased remuneration to the operative, but a less price for producing a given quantity of "drawings" or "rovings." The basis of the Oldham list of 1890 and the Universal list of 1907 is given in Section II (*Journal*, February, 1910, pp. 155-156). There are lists in other districts, and the Blackburn "Lists of Prices for Slubbing, Intermediate, and Roving frames, January 6th, 1873," illustrates the advance which has taken place and the method of payment. In slubbing, the standard length is 70 spindles; for every additional five spindles 4 per cent. is to be added, and for every five less spindles 2 per cent. is to be deducted. For the intermediates the standard length is 90 spindles; for every additional five spindles 3 per cent. is to be added, and for every five less spindles  $1\frac{1}{2}$  per cent. is to be deducted. In roving the standard

length is 125 spindles; for every five additional spindles 7 per cent. is to be added, and for every five less spindles 1 per cent. is to be deducted. The corresponding lengths of frame under the Oldham and Universal lists are: slubbers, 84 spindles; intermediates, 124 spindles; and rovers, 164 spindles.

Thus, under the Blackburn list, if a slubber with 70 spindles is supposed to earn 16s. 8d., with 75 spindles she would earn 17s. 4d., and with 65 spindles 16s. 4d., and so on.

With such an arrangement there is every inducement to the employer when putting in new machinery to have more spindles to a frame. His labour cost of production decreases, and the operatives earn higher wages. Further, there is always an incentive to greater speed. More work is done by each unit of machine, and the proportion of standing charges, overlooking, &c., is decreased. This inducement has been sufficient to cause a great development in average spindleage. Contemporary writers say very little about the sizes of frames, and I have not been able to trace the growth until recent years. The old "stretcher," which in 1797 did the work of the slubbing and roving frames, had 90 spindles.<sup>14</sup> The differentiation between slubbing and roving brought shorter slubbing frames and longer roving frames, and the added intermediate frame was, as its name indicates, midway between the two. An old-established spinning and manufacturing firm in Lancashire have given me the following particulars of frames which they have put in at various times:—

		Spindles.
Slubbing frames .....	1878	76—90
	1906	96
Intermediates .....	1863	92
	1883	96—120
	1906	108—126
Roving frames .....	1863	120
	1890	150
	1906	150—180

At another place the average spindleage of all frames then running, old and new, were:—

	1885.	1906.
	Spindles.	Spindles.
Slubbers .....	70	89
Intermediates .....	92	102
Rovers .....	109	146

Even if the present usual length of frame is adhered to, the average length will increase for some years, owing to the old short

<sup>14</sup> See part I, p. 19. Notes to Table 3.

ones being taken out when finished with and those of the present normal length being substituted. It is not certain, however, that the maximum length has yet been reached.

An even greater development has probably taken place in the mule. Hargreaves' jenny, 1764, originally had 8 spindles, soon increased to 20 or 30. Crompton's mule invented in 1774 and completed in 1779, combined Hargreaves' jenny and Arkwright's frame of 1769, and started with about 30 spindles. In 1787, "mule jennies" contained about 90 spindles and "hand jennies" about 80 spindles. The mule was rapidly improved after this, and large numbers of spindles were added. In 1788 we find McConnell making mules of 120 and 144 spindles; by 1795 180 is "as few as any we have made this year," and "what was thought best two years ago is now thought too small, as 216 [spindles] now run as light as 144 used to." In 1796 we first hear of two mules being paired, with the gearing in the middle. In 1799 we find mention of 264 spindles in April and 300 in July. This length is, however, probably quite extraordinary as by 1819 the usual length was under 348 spindles.

In 1825 Roberts invented the self-acting mule and by 1830 had very materially improved it. Between 1830 and 1834 we are told by Ure that these mules were put in in 60 mills, containing between 300,000 and 400,000 spindles. The hand mule, however, remained a long time; the self-actor being adopted first for coarse counts and gradually applied to finer counts as improvements were made. It superseded the hand mule very largely in Preston during the strike of 1853, in Oldham between 1866 and 1874, and in Bolton between 1878 and 1886. It is possible that one or two are actually working to-day. There were about a dozen in Bolton four years ago.

The adoption of self-acting, very often by an alteration of the hand-mule, did away with one piecer. This of itself would tend to raise the average earnings per head and increase the average number of spindles per operative.

In 1833 the hand-mule usually had 300 to 400 spindles, and the self-actors 360 to 480. In the "seventies" the average might be put at from 720 to 960; to-day 1,080 is a usual size. The largest known to me are 1,572 spindles, and these\* (or their predecessors filling the same space) have, singularly enough, been built for over 50 years. Speeds have increased very considerably. In 1830 Ure speaks of 3,800 to 5,000 revolutions of the spindles per minute. To-day the speed is from 8,000 to 9,000. In 1876, when the Oldham spinning list was adopted, the standard number of draws, that is journeys in and out of the carriage which contains

the spindles, was three in 50 seconds, to-day it is three in 42 seconds.

Turning to weaving, we find that an equally wonderful development of efficiency has taken place. The power loom was invented in 1785 and patented in 1787. For many years it came into use but slowly. Gradually improvements were made, and by 1813 it had assumed a form which has been little altered since. From that time to 1830 an enormous number were erected. In 1833 it was still defective, so defective, indeed, that between then and 1882 the improvements made trebled its productive power. The chief of these improvements was the self-acting "temple" or "templet," a rotating contrivance for keeping the woven cloth automatically stretched across the loom, and thereby obviating the necessity of stopping the loom as every few inches were woven to shift the stationary temple, which consisted of a stick with pins in the ends. This moved on as the cloth was wound on the beam; the automatic temple was a part of the loom, and the cloth passed through it. This invention is said to have made possible the minding of an additional loom per weaver. It is not clear who first invented the automatic temple, but Messrs. Kenworthy and Bullough, of Blackburn, are credited with having produced a loom which "with its self-acting temple, stop, and taking-up motion, reduced the labour of the weaver by nearly one-half."

Apart from changes in piece prices there are two important ways in which weavers' wages may have risen, viz., by increased speed of the loom and by an increased number of looms tended. The speed of the loom, as indicated by the number of picks woven per minute (*i.e.*, the number of times the shuttle passes from one side to another) has increased very greatly. Lord Shaftesbury, speaking in the House of Commons in 1844, stated that the average speed had advanced between 1819 and 1842 from 60 to 140 picks per minute. Ellison quotes, with approval, an estimate by Messrs. Bridges and Holmes in 1873 that the speed in 1833 was 90 to 112 picks per minute, and puts them in 1882 as 170 to 200 picks. The following account was given me by an old weaving overlooker. In 1850, 130 picks, gradually increasing to 160 by the time of the famine, increased sharply after the famine until the "boom" of the "seventies," and then more slowly to 195 in 1882. Another well qualified informant told me that his looms had run at 165 picks in 1864, and 202 in 1906, but that new looms put in since then are running at 212 picks. At a third mill the average in 1875 was 180, and in 1908, 195. Messrs. Bridges and Holmes, in 1873, put the average at 175 or 180 picks. In some parts of Lancashire the speed to-day reaches 240 picks, in weaving coloured



goods, but the looms are somewhat narrower than usual for plain goods. On the whole, the course has probably been: 1833, about 100 picks; 1850, 130 (or more); 1865, 165; 1873, 175; 1885, 180; 1906, 200.

At first nearly all the power loom weavers were women, assisted by children. In 1819, Kennedy, in his "Rise and Progress of the Cotton Trade,"<sup>15</sup> said "it is found that one person cannot attend more than 2 looms." Professor S. J. Chapman says that "for a long time a single operative could not manage more than 1 or 2 looms."<sup>16</sup> Yet we hear of weavers with three or four looms quite early. These almost invariably had a "tenter" or assistant, and I do not think they were very common until the "forties," when the chief improvements in the loom had been made. I repeat the summary made, given in the section on winding, reeling, warping, and weaving for the Manchester district,<sup>17</sup> which further study of the question has confirmed: "From the introduction of the power loom the average weaver had 1 or 2 looms, rising to  $2\frac{1}{2}$  by about 1850, increasing slowly to  $2\frac{2}{3}$  by 1860, and more rapidly after the cotton famine to  $2\frac{4}{5}$  by 1870, and more slowly to  $3\frac{1}{5}$  by 1877. By 1886 the average had advanced to 3.3 and by 1906 to 3.44." This, it must be remembered, is the average *per weaver*. The old three- and four-loom weavers had tenters whom they paid out of their gross earnings. Gradually the three-loom weavers did without tenters; then some four-loom weavers, mainly men, followed; to-day quite a large number of four-loom weavers are without tenters, but a six-loom weaver invariably has one. Working without a tenter, of course, usually augments the weaver's net earnings, though not to the full extent of the tenter's wages.

In assisting to bring about this increased efficiency of operative and machine, the Cotton Industry has, in my judgment, been admirably aided by its efficient organisation of employers and operatives, its universal adoption of the principles of Collective Bargaining, its Standard Piece Lists, and its high proportion of piece work. 65.7 per cent. of the cotton operatives work at piece rates, and a further considerable proportion are employed at time rates by piece workers (piecers, reachers-in, weavers' tenters, &c.). These are, for all practical purposes, piece workers. The operatives, therefore, have every inducement to keep pace with faster and better machinery if their price lists are so arranged as to give them the advantage of greater output.

<sup>15</sup> Quoted by Chapman, *The Lancashire Cotton Industry*, 1904, p. 31. I have not traced the original.

<sup>16</sup> Chapman, p. 46.

<sup>17</sup> See p. 30.



We have already seen that in frame tenting this is ensured by the addition of a proportionate standard, or rather expected, wage for each additional unit of spindleage. This device is typical of the industry. Its classic example is that of the Oldham Spinning List (1876). I give the main features of this list, which shows how this principle works.

*Extract from the Oldham Spinning List, operatives' edition.*

No. of dozen spindles.	Total earnings should draw from office.	Spinner's wages.	Piecers' wages.
	£ s. d.	s. d.	s. d.
50	2 2 4	27 10	14 6
60	2 9 6	29 6	20 0
70	2 17 2	31 2	26 0
80	2 19 10	32 10	27 0
90	3 3 6	34 6	29 0
100	3 9 2	36 2	33 0
110	3 14 4	37 10	36 6

The wage which should be earned in a week of 56½ hours, allowing for the various necessary stoppages, is stated in the first column. The piece prices are calculated by ascertaining how many hanks of yarn the mules will spin in a week, and dividing it into the amount given in Column 2. The more spindles in the mule, the lower the price, but the higher the average earnings. The inducements to the employer to put in the longest mules for which his mill and work are suited and to the operative to prefer long mules to short ones are obvious. The inducement to keep the machinery in good order is also obvious, when it is understood that the wage must be earned equally on mules 25 years old and on those only just put in. If the old machines will not yield the standard wage at the prices calculated when they are put in, the prices must be advanced. The earnings must not suffer. In other words, the backward employer is penalised for his relative inefficiency.<sup>18</sup> The penalty is often twofold. If he prefers to work with small machines, he pays a higher price per unit of work than does his competitor whose mill is equipped with the large machines. If he does not renew his machinery and enable the output to be maintained he again has to pay a higher price than his competitor whose machines are the newest and best of their size. We hear a great deal occasionally of Trade Union objections to new and improved processes and higher speeds, but the cotton industry has built up its magnificent efficiency largely because its operatives

<sup>18</sup> Compare S. and B. Webb. *Industrial Democracy*, p. 413 of the one-volume edition.

take the opposite view, and not only welcome improvements but penalise all who will not make them. There are many practical difficulties in the way of adopting the cotton trade principles in all industries, but they are slowly gaining a footing in the woollen industry, where the adoption of a "fast" loom for a "slow" one brings a lower piece price, a greater output per unit of time, and a higher earning at the week end. The spinning branches of all textile trades are so much akin to the cotton trade (all spinning is either done on the "mule" or the "frame") that the adoption of piece work with standard lists based on the principle of a lower price but higher wage as the size of the machine increases should be easy of arrangement, and would benefit employer and employed alike.

It is worthy of notice that in the weaving branch of the cotton trade this principle is not in vogue. The price fixed by the Uniform Weaving List applies to all looms of whatever speed, and to weavers with two, three, four, or six looms each. In such circumstances it would be advantageous to the employer to give a weaver as few looms as possible, and to the operative to tend as many as he or she can get. A two-loom weaver earns an average of 6s. 6d. per loom per week, and a three-loom weaver 5s. 11s. 3d. per loom per week, each without an assistant. The four-loom weavers in the Wage Census earn 6s. per loom per week, but many have tenters. Perhaps the average without a tenter will be 5s. 10d.

Subject to the supply of weavers, an employer probably does endeavour to keep the average number of looms per weaver down, and therefore keep his production up. His test is the average per loom all over the shed, and this he always wants to see increasing. Every increase means more work done with the same standing charges. On the other hand, his operatives must earn a sufficient wage to keep them from entering the spinning branches of the trade. Usually each operative has to prove his or her worth on two looms, then three looms, and only the best are promoted to four looms. The inducement to "speed up," however, is still operative. The "tackler," paid on the weavers' earnings, is induced to keep production to the maximum; the employer is induced to "speed up" the looms, and when renewing to put in the fastest his work will stand, by the increased output relative to standing charges.

Although, if a weaver only had one loom, he or she would be paid at the same price as the weaver with four looms, the "standard" weaver is really the three-loom weaver, and the gross average earnings per loom of the four-loom weaver is probably the same as that of the "three-loomer," only part of it going to the tenter. Tenters' wages have usually been very nearly equal to the earnings of one loom, and the higher wages which "doffers" and other assistants earn in the other departments make recruiting of tenters difficult.

Many employers in theory refuse to allow their weavers to take four looms without a tenter; few, in practice, are able to carry this out.

One very interesting feature of the cotton trade is the regularity of the output, despite the great variation in the ability of the operatives. Taking some consecutive weeks at random from an old "average" book relating to a mill which we cannot identify, the average earnings per pair of looms in 1880 were:—11s. 10½d., 12s. 2¼d., 12s., 11s. 10½d., 11s. 9½d., 11s. 8¾d., 11s. 9½d., 12s. 0¼d., 12s., 11s. 11d., 12s. 0½d., 11s. 10½d., 11s. 11¾d. I have even seen them more regular, and not varying by more than 1d. per pair between the highest and lowest of twelve weeks.

A spinning mill not making a wide range of counts will have nearly as regular an output. The following is not an unfair example:—

*Total earnings of all employed at a spinning mill in consecutive weeks.*

£	s.	d.	£	s.	d.	£	s.	d.
72	13	3	73	1	7	73	11	0
72	18	3	73	11	0	73	1	2

To vary only 18s. on 73l. in six consecutive weeks, or less than 1¼ per cent., is a regularity of which not many industries can boast.

#### *Comparison of cotton with other industries.*

It will not be unprofitable to compare the results we have arrived at for the cotton industry with those which are moderately well established for other industries. An examination of the course of wages in various large industries as indicated by the index numbers given in Table 49 reveals the fact that the advance in the wages of cotton factory operatives is only exceeded by that of the Scottish agricultural labourer. From 1850 no industry shows so great a proportionate advance.

I do not think that this excess of advance in the cotton industry is accidental. The outstanding features of the industry are, its extensive collective bargaining, its high proportion of piece work, and its encouragement of higher efficiency both in operative and machine. Operating over at least half a century, these influences have helped to change the cotton industry from an ill-paid, if not badly sweated, industry to a well paid and almost entirely non-parasitic one. A simple and much-needed re-organisation of "piecing" would, indeed, almost rid the industry of "blind alley" occupations. The comparison with the wool and worsted industries, as illustrated by Huddersfield, Leeds, and Bradford, is especially instructive. The progress is fairly continuous at Huddersfield; it is almost arrested at Bradford and Leeds. Trade Unionism is strong

TABLE 49.—*Showing the changes in average wages in various industries, 1800—1906.*  
(1900 = 100.)

	1800.	1810.	1820.	1831.	1840.	1850.	1860.	1870-71.	1880.	1886.	1891.	1900.	1906.
Cotton, including hand-loom weavers .....	—	71	49	41	47	49	63	—	—	—	—	(100)	—
Cotton, excluding hand-loom weavers .....	—	58	57	52	51	51	64	76	81	83	93	100	107
Wool, Huddersfield .....	—	—	—	57	53	67	82	90	103	92	94	100	109
" Leeds .....	85	110	101	(75-80)	86	72	82	104	97	100	—	—	100
Worsted, Bradford .....	—	—	—	101	86	—	82	76	82	74	96	100	106
Jute .....	—	—	—	—	—	—	61	77	82	84	93	100	102
Engineering .....	51	64	65	64	69	67	73	77	83	83	95	100	99
Shipbuilding .....	47	—	56	60	62	64	68	75	87	87	90	100	100
Building .....	40	57	57	53	57	58	68	76	83	94	98	100	102
Compositors .....	72	86	76	76	81	81	81	83	94	94	98	100	100
Coal hewers .....	—	—	—	—	—	62	71	74	67	67	93	100	90
Puddlers .....	—	—	—	—	—	66	66	80	81	64	72	100	78
Gas .....	—	—	—	—	—	67	70	78	87	87	96	100	102
Furniture .....	—	—	—	—	—	66	71	81	92	91	94	100	100
Agriculture, England and Wales .....	73	93	84	68	72	64	76	84	92	90	93	100	101
Agriculture, Scotland....	34	48	38	32	44	50	60	71	85	87	91	100	103

Correct the cost



enough at Huddersfield to make Collective Bargains with the Employers' Associations; there are some recognised Standard Piece Price Lists in operation and, though not to so great a degree as in the cotton industry, *maximum* efficiency is striven for and, in a way, the least efficient employer is penalised. The proportion of piece workers is 54·9 as compared with 65·7 in the cotton industry. In the other districts cited collective bargaining is in its infancy; there are no Standard Piece Price Lists, and the low proportion of 28·1 per cent. of piece workers is found at Bradford, and of 33·8 per cent. at Leeds. I do not suggest that a high proportion of piece workers and high and rising wages always accompany each other, but in those occupations where, as in combing, spinning, winding, warping, and weaving, there are routine processes similar in each mill or factory, a high proportion of piece work done under standard conditions is the safest guide to progress.

*Summary and conclusion.*

We have seen that the device of the index number enables us to arrive at substantial conclusions, in spite of the apparent inconsistencies and contradictions in the raw material of our inquiry. In the early days of the cotton industry an enormous range of earnings prevailed, and the industry was greatly dependent on child-labour. Continuous adaptation to new methods, extensive collective bargaining, an ever-widening area of standardised conditions, and a conscious adoption of the principles of mutual inducements to both employer and operative to increase the efficiency of person and machine, and of penalising the backward, inefficient employer by relatively increased costs of production, have brought about an increase of wages unequalled over sixty years in any other industry. We have been able, in some instances, to analyse the advance due to the decreased employment of children, the advance of piece prices paid, and the increase in personal and mechanical efficiency, and have found that, even if the old proportion of child-labour had still prevailed, and the piece prices of 1860 had remained unimproved upon, a very considerable advance in average earnings would have accrued. With all this the hours of labour have been reduced considerably.

We have not seen any evidence that these progressive forces have ceased to be operative, or that there is any need to be apprehensive of a decline. The progress in the cotton trade is a marvellous example of the results of close and persistent organisation, which should be copied by many other industries, if they would maintain and increase their efficiency.



APPENDIX.

Table showing the percentage employed and average wages of various classes of cotton operatives in LANCASHIRE and CHESHIRE in 1886 and 1906.

Occupation.	1886.				1906.		
	Time or piece.	Number.	Per cent.	Average wage.	Number.	Per cent.	Average wage.
<b>MEN.</b>							
Foremen:—							
Preparing .....	T	746	0·6	32/2	754	0·4	39/0
„ .....	P	16	—	28/10	34	—	43/9
„ .....	T & P	762	0·6	32/1	788	0·4	39/2
Spinning .....	T	611	0·5	32/1	581	0·3	41/11
„ .....	P	6	—	24/3	39	—	45/0
„ .....	T & P	617	0·5	32/0	620	0·3	42/11
Weaving .....	T	167	0·1	31/9	625	0·3	38/7
„ .....	P	1,151	0·9	36/9	2,303	1·3	43/9
„ .....	T & P	1,318	1·0	36/1	2,928	1·6	42/8
Others .....	T	180	0·1	37/5	692	0·4	34/5
„ .....	P	6	—	22/1	28	—	37/4
„ .....	T & P	186	0·1	36/11	720	0·4	34/6
Mixers .....	T	558	0·4	17/2	582	0·3	21/7
Scutchers .....	T	744	0·6	18/9	760	0·4	25/9
„ .....	P	16	—	29/4	—	—	—
„ .....	T & P	760	0·6	18/10	760 +	0·4	—
Grinders .....	T	1,942	1·5	20/4	1,557	0·8	29/5
„ .....	P	41	—	20/4	—	—	—
„ .....	T & P	1,983	1·5	20/4	1,557 +	0·8	—
Spinners—							
Counts below 40's ....	P	—	—	—	4,798	2·5	38/10
„ 40's to 80's ....	P	—	—	—	3,943	2·1	43/0
„ above 80's ....	P	—	—	—	1,269	0·7	46/0
All counts.....	P	6,951	5·3	31/3	10,010	5·3	41/5

*Note re Percentages.*—The percentages in this table are calculated to the nearest decimal place, and slight discrepancies occur owing to “throwing up” the excess of ‘05 to the nearest ‘1.

*Table showing percentage employed and average wages.*

Occupation.	1886.				1906.		
	Time or piece.	Number.	Per cent.	Average wage.	Number.	Per cent.	Average wage.
<b>MEN—contd.</b>							
Big piecers (M and B)	T	5,690	4·3	14/1	8,851	4·7	17/9
" "	P	212	0·2	14/10	164	0·1	19/10
" "	T & P	5,902	4·5	14 1	9,015	4·8	17/10
Twiners.....	P	101	—	33/8	125	0·1	42/1
Ball warpers.....	T	—	—	—	33	—	30/7
" "	P	25	—	38/0	216	0·1	42 0
" "	T & P	25	—	38/0	249	0·1	40/6
Sizers, &c.....	T	332	0·3	32/10	426	0·2	43/0
" "	P	265	0·2	38/2	131	0·1	46/2
" "	T & P	597	0·5	35·2	557	0·3	43/9
Warp dressers.....	P	—	—	—	675	0·4	37/1
Twisters-in.....	T	14	—	21/0	33	—	25/4
" "	P	851	0·6	20 3	1,166	0·6	25/7
" "	T & P	865	0·6	20 3	1,199	0·6	25/7
Drawers-in.....	T	9	—	23/6	—	—	—
" "	P	366	0·3	24/10	300	0·2	30/9
" "	T & P	375	0·3	24/10	300 +	0·2	—
Weavers, 2 looms.....	P	239	0·2	15/11	661	0·4	21/8
" 3 ".....	P	1,284	1·0	16/6	1,433	0·8	19/6
" 4 ".....	P	6,257	4·7	20/10	11,367	6·1	25/1
" 6 ".....	P	767	0·6	26/7	1,825	1·0	32/11
" All*.....	P	8,577	6·5	20/7	15,286	8·1	25/4
Fustian weavers, 2 looms.....	P	12	—	12/0	—	—	—
" " 3 ".....	P	73	—	16/6	—	—	—
" " 4 ".....	P	206	0·2	19/10	69	—	21/8
" All.....	P	291	0·2	18/8	69 +	—	21/8
Warehousemen.....	T	1,404	1·1	22/4	2,585	1·4	24/1
" "	P	182	0·1	21/2	889	0·5	28/11
" "	T & P	1,586	1·2	22/2	3,474	1·9	25/4
Mechanics.....	T	669	0·5	31/2	607	0·3	34/1

\* Including a few on 1 and 5 looms respectively in 1886.

Table showing percentage employed and average wages.

Occupation.	1886.				1906.		
	Time or piece.	Number.	Per cent.	Average wage.	Number.	Per cent.	Average wage.
<b>MEN—contd.</b>							
Enginemmen .....	T	909	0·7	25/3	1,260	0·7	31/3
„ .....	P	—	—	—	23	—	35/8
„ .....	T & P	909	0·7	25/3	1,283	0·7	31/4
Labourers .....	T	208	0·1	18/7	1,369	0·7	20/2
Other men .....	T	2,619	2·0	20/1	2,917	1·6	23/2
„ .....	P	347	0·3	28/7	590	0·3	29/1
„ .....	T & P	2,966	2·3	21/1	3,507	1·9	24/2
<b>TOTAL MEN</b> .....	T & P	36,206	27·5	23/3	56,180	30·0	27/3
<b>LADS AND BOYS.</b>							
Little piecers .....	T	4,226	3·2	9/9	8,211	4·4	12/0
„ „ .....	P	—	—	—	72	—	11/7
„ „ .....	T & P	4,226	3·2	9/9	8,283	4·4	12/0
Weavers, 2 looms.....	P	1,471	1·1	10/9	1,685	0·9	12/5
„ 3 „ .....	P	689	0·5	15/2	1,310	0·7	17/11
„ 4 „ .....	P	41	—	19/3	668	0·4	24/1
„ All .....	P	2,201	1·7	12/3	3,663	1·9	16/6
Other lads and boys ....	T	4,416	3·3	8/4	5,387	2·9	9/4
„ „ .....	P	233	0·2	11/4	196	0·1	13/8
„ „ .....	T & P	4,649	3·5	8/6	5,583	3·0	9/6
Half-timers .....	T	5,169	3·9	3/0	3,006	1·6	3/7
<b>TOTAL LADS AND BOYS</b> .....	T & P	16,245	12·3	7/7	20,535	10·9	10/11
<b>WOMEN.</b>							
Draw-frame tenters.....	T	547	0·4	12/11	379	0·2	16/9
„ „ .....	P	1,847	1·4	15/4	2,294	1·3	20/7
„ „ .....	T & P	2,394	1·8	14/9	2,673	1·4	20/0
Slubbing „ .....	T	—	—	—	116	0·1	16/2
„ „ .....	P	—	—	—	1,706	0·9	19/11
„ „ .....	T & P	—	—	—	1,822	1·0	19/8
Intermediate „ .....	T	—	—	—	88	0·0	15/1
„ „ .....	P	—	—	—	2,113	1·1	19/5
„ „ .....	T & P	—	—	—	2,201	1·2	19/4

Table showing percentage employed and average wages.

Occupation.	1886.				1906.		
	Time or piece.	Number.	Per cent.	Average wage.	Number.	Per cent.	Average wage.
<b>WOMEN—<i>contd.</i></b>							
Roving .. .. .	T	—	—	—	123	0·1	18/9
" .. .. .	P	—	—	—	6,294	3·4	19/3
" .. .. .	T & P	—	—	—	6,417	3·4	19/3
Frame tenters unclassified	P	—	—	—	526	0·3	21/5
Slubbing, intermediate, roving, and unclassified tenters .....	T	733	0·5	14/5	327	0·2	16/10
	P	7,658	5·8	15/5	10,639	5·7	19/5
" .. .. .	T & P	8,301	6·3	15/4	10,966	5·9	19/5
Ring spinners .. .. .	T	1,669	1·3	12/0	3,130	1·7	15/2
	P	488	0·3	14/0	871	0·5	16/11
" .. .. .	T & P	2,157	1·6	12/6	4,001	2·1	15/7
Reelers and winders ....	T	390	0·3	13/2	333	0·3	13/6
	P	10,139	7·7	13/0	13,063	7·0	15/2
" .. .. .	T & P	10,529	8·0	13/0	13,406	7·1	15/2
Doubblers .. .. .	T	441	0·3	12/0	590	0·3	13/10
	P	218	0·2	11/7	169	0·1	14/9
" .. .. .	T & P	659	0·5	11/10	759	0·4	14/0
Beam warpers .. .. .	T	42	—	15/4	314	0·2	18/0
	P	1,241	0·9	18/3	1,545	0·8	21/8
" .. .. .	T & P	1,283	1·0	18/2	1,859	1·0	21/1
Weavers, 1 loom .. .. .	P	152	0·1	12/6	—	—	—
" 2 .. .. .	P	3,953	3·0	11/8	3,050	1·6	13/11
" 3 .. .. .	P	10,142	17·7	16/1	15,213	8·1	17/9
" 4 .. .. .	P	13,546	10·3	19/11	24,803	13·2	23/6
" 6 .. .. .	P	196	0·2	26/3	168	0·1	30/7
" All .. .. .	P	27,989	21·3	17/4	43,234	23·1	20/10
Fustian weavers, 2 looms	P	298	0·3	11/6	127	0·1	12/11
" 3 .. .. .	P	1,123	0·8	17/1	637	0·3	18/4
" 4 .. .. .	P	528	0·4	18/10	211	0·1	20/10
" All .. .. .	P	1,949	1·5	16/8	975	0·5	18/2

Table showing percentage employed and average wages.

Occupation.	1886.				1906.		
	Time or piece.	Number.	Per cent.	Average wage.	Number.	Per cent.	Average wage.
<b>WOMEN—contd.</b>							
Other women .....	P	1,446	1·1	11/11	2,597	1·4	13/4
„ „ .....	P	1,102	0·8	13/8	1,522	0·8	16/5
„ „ .....	T & P	2,548	1·9	12/8	4,119	2·2	14/6
<b>ALL WOMEN</b> .....	T & P	57,809	44·0	15/9	81,992	43·8	19/0
<b>GIRLS.</b>							
Reelers and winders ....	T & P	1,010	0·8	9/4	2,164	1·1	11/0
Weavers, 1 loom .....	P	46	—	5/4	—	—	—
„ 2 „ .....	P	4,024	3·1	10/5	6,066	3·2	11/9
„ 3 „ .....	P	1,043	0·8	15/8	3,163	1·7	17/4
„ 4 „ .....	P	42	—	19/4	722	0·4	22/2
„ All .....	P	5,155	3·9	11/6	9,951	5·3	14/3
Fustian weavers, 2 looms	P	—	—	—	84	—	12/1
„ „ 3 „	P	—	—	—	90	—	17/10
„ „ All ....	P	34	—	8/1	174	0·1	15/1
Other girls, full time ....	T	6,921	5·3	7/1	11,795	6·3	8/5
„ „ .....	P	867	0·6	8/6	1,305	0·7	10/5
„ „ .....	T & P	7,788	5·9	7/3	13,100	7·0	8/7
Half-timers .....	T*	7,333	5·6	2/7	3,222	1·7	3 0
<b>ALL GIRLS</b> .....	T & P	21,320	16·2	6/10	28,611	15·3	10/2
<b>ALL EMPLOYED</b> ...	T & P	131,580	100·0	15/4	187,318	100·0	19/7

\* A very few worked by piece-work in 1906.

This table has not been included in the main body of the paper because, owing to the unfortunate method of the Board of Trade in making the groups of “other” men, women, lads and boys, and girls so large. For example, as we do not know how many of the 4,649 “other lads and boys” are piecers, weavers’ assistants, ring doffers, reachers-in, &c., we cannot definitely tell what departments have grown most proportionately between 1886 and 1906.

The changes in the relative proportions of men, &c., have been :—



	1886.	1906.
Men.....	27.5	30.0
Lads and boys, full time .....	8.4	9.3
"    half time .....	3.9	1.6
Women .....	44.0	43.8
Girls, full time .....	10.6	13.6
"    half time .....	5.6	1.7
	100.0	100.0

These changes are not very significant, except for the reduction of half-timers, who have been partly replaced by full-time boys and girls. The growth of men relatively to women may also be significant, as it is mainly to be found in weaving.

Foremen have increased from 2.2 per cent. to 2.7 per cent., but the men in mixing, scutching, and cardrooms have declined from 2.5 per cent. to 1.5 per cent.

The figures for spinning are interesting, thus:—

	1886.	1906.
Men spinners .....	5.3	5.3
"    piecers .....	4.5	4.8
Lads and boys, piecers .....	3.2	4.4
Total recorded in male spinning .....	13.0	14.5
Assume, half of half-time lads and boys as piecers	2.8	0.8
Total estimated male spinning .....	15.8	15.3
Ring spinning, women .....	1.6	2.1
Total recorded in spinning .....	17.4	17.4

A slight re-arrangement of proportions has left the total percentage shown in spinning unchanged. The inclusion of ring-frame doffers (girls and boys) would probably add a little to the 1906 percentage.

Frame-tenters (*women*) have increased from 8.1 per cent. to 13.2 per cent., indicating that the improvements in machinery have been greater in spinning and the earlier preparation than the frames and looms.

Weavers have also increased in proportion.

In 1886 and 1906 these were distributed thus:—

the method or the result. Quite recently he had occasion to examine closely cotton wages during the last twenty years, and he had made an index number from 1880 to 1906. In so doing, he had had to reject some part of the work which he did for a Paper in 1895, dealing with wages; and he found that the figures in his earlier Papers from 1860 to 1883, pieced together with the new results from 1880 to 1906, agreed with remarkable closeness with Mr. Wood's figures. He mentioned that to lend as much support as he could to the line of statistics since 1861. If his estimate had differed from them, however, he should have withdrawn it in favour of Mr. Wood's, but as it was he was glad to think the rather rapid selection he made fifteen years ago had been supported by this new series of numbers. One of the great difficulties in the Paper was the combination of the cotton industry before it was a full factory industry with the cotton industry as it was known to-day. He was glad Mr. Wood had proceeded with so much caution on this point, because it was evident that certainty could not be arrived at. He was surprised he could get so much support for his estimates as he had incidentally obtained; he could not obtain accuracy (which, in fact, was hardly conceivable), for it was comparing two unlike things together. The operatives in 1806 were handling cotton, and the factory workers to-day were handling cotton; but at that point the resemblance ceased. It was very interesting to see how the figures ran together, but their combination was not of very great importance; and, therefore, he did not regret so much as he otherwise would have done the uncertainty that arose from the welding together of the two classes of figures. He would be glad, however, if the foot-note as to winders, &c., in 1800 were brought more into the forefront before the Paper was published, to show that it was an important qualification of the main table. At present, it was not unlikely that the main table would be quoted as referring to handloom workers and factory weavers, leaving out all other operatives. That would modify the general impression given by the Paper in the right direction, and was worth more than a foot-note. He was rather sorry that the author had not brought the question of half-timers more to the front, for they must not lose sight of the fact that a large percentage of cotton operatives, especially in the latter part of the last century, were only working half-time, and could hardly be counted as full persons in a divisor which gave the average. That was dealt with, but not exactly in the place he should have expected to see it. A glance at the results of the Paper, as compared with the changes in piece lists, showed that the changes in piece lists had no definite relation to changes in earnings. A rise in piece lists might be connected with a fall in earnings. The same was true, although it did not operate so much in the cotton trade, in regard to changes in time rates. Changes in standard time rates and piece rates did not enable one to place the change in average earnings. It was necessary to take the industry as a whole, and to watch for all the causes besides nominal changes in rates before one could make any statement which could be depended on in regard to changes in earnings. With regard to the

last table, it was true that the cotton trade had increased in earnings more rapidly than any other trade ; and it was interesting to notice the line of cotton wages beside that of the building trade wages, as they knew that the two trades were very different in their history ; building was still done much as it was done 100 years ago—what few changes there had been had been recent. But cotton was a different industry absolutely. In the one case we had mainly time rates, and in the other mainly piece rates. If one drew the two lines together and compared them, it would be found that the resemblance was remarkably close, both as a whole and in detail. The Paper was an extraordinarily valuable one, and it carried forward the method of dealing with wage statistics yet another stage.

Mr. A. W. FLUX, in seconding the vote of thanks, said he regretted he had not had an opportunity of studying the Paper previously, so that he could hardly speak with any certainty about some points which had been raised. Mr. Bowley had already called attention to the obvious fact that the preparation of a Paper of this character involved an enormous amount of detailed labour. He was struck by the extent to which the estimates by various authorities cited in the Paper did in an extremely remarkable way confirm one another. If one could have had the opportunity of seeing those estimates grow under one's eye, in the way to which Mr. Bowley had referred, he had very little doubt that the sense of conviction that they represented as nearly as possible the fact would have been far more marked than it could be on first hearing the Paper read. He was tempted to ask a question which was suggested by the instructive diagram accompanying the Paper. At the beginning and at the end of the nineteenth century it appeared that the general average of wages of all operatives in the cotton industry had substantially the same level, which was a very remarkable fact. The proportion of children in the industry was substantially higher at the earlier date, and that would lead to the conclusion that the figures presented failed to represent fully the high level of adult wages at the beginning of the nineteenth century. Had any adjustment of the figures been made to allow for the changed proportion of children ? It might be that the answer was in the part of the Paper which the author had not been able to read, but it did not appear to be in the part actually read. Another point was one on which the Chairman remarked—the use of hypothesis. On p. 117 they were told that, if what happened on the average in certain Lancashire centres happened also at Preston, Blackburn, and Clitheroe, the average for those places would be rather less in 1840-42 than in 1833. Did that mean that the figures in the preceding table, representing Preston and Blackburn in 1842, were interpolated on the basis of figures from elsewhere ?

Mr. WOOD said Mr. Flux had misunderstood him. The figures for 1840 and 1841 for Preston and Blackburn were correct ; and the details were given in previous issues of the *Journal*. They did not

know exactly what happened in 1833 in Preston, and no figure was given. He had to assume that something happened; and he assumed that what happened at Clitheroe, where they had information, happened also at Blackburn and Preston.

Mr. FLUX said he was glad to have elicited that explanation, which removed the doubt which arose in his mind from not having had an opportunity of bringing the four valuable articles in the *Journal* and this Paper together. On p. 137 reference was made to the reduction of hours and the effect of that on wages; and the suggestion was that after the hours were reduced there was a speeding-up of machinery. He did not wish to say anything very definite one way or the other, but it might be asked whether perhaps the reduction of hours was not itself the necessary consequence of speeding-up, with its resultant strain on the workers. How far that might modify some of the general conclusions, he was not prepared to say. There was another point. While he was personally in sympathy with the author as to the conclusion he drew, namely, that organisation had tended to raise wages in the cotton industry, still, looking at the matter as a critic, it occurred to him that the author was finding in the figures to some extent what he desired to find. One might be permitted to suggest that there was another point of view, and that a leisurely study of the figures might possibly fail to show that they bore out absolutely the suggestions which were put forward. It was very difficult to summarise a Paper of that length apart from the detailed evidence; and it was therefore necessary to defer definite judgment pending a detailed study of that evidence. He had great pleasure in seconding the vote of thanks.

Miss B. L. HUTCHINS asked whether Mr. Wood had come across any evidence as to the effect of speeding-up on the energy and health of the operatives. A great deal of attention had been given to that in a recent book from America. She thought it ought to be remembered that increased efficiency of machinery might tend to economic or technical progress, and yet involve a decrease in social efficiency if the nervous strain were too great.

Mr. S. ROSENBAUM asked if there were anywhere in the Paper a statement showing what was the average wages of adult workers only, distinguishing also males and females, at different times in the century; and, if not, whether such information was available. He thought that had a very important bearing on the question under discussion.

Mr. G. UDNY YULE said he greatly appreciated the immense amount of labour which had gone to the collection of the data for the Paper.

The PRESIDENT said the question was one on which so much special knowledge was required that he could only deal, as an



outsider, with one or two points which had struck him during the reading of the Paper. The speeding-up of machinery, for instance, was conducive, no doubt, to the greater efficiency and to the higher wages of the operative; but did it not tend to curtail the effective period of the worker's life? Some fourteen or fifteen years ago he had read a report in which the speed at which factory machinery was run in the United States (which was not so high as that mentioned in the Paper) was alleged to result in the incapacity of the worker for that class of work after the age of 40 or 45. He remembered Mr. John Burns saying that at the pay-desk of an American factory he had seen "not a grey hair on the head, nor a smile on the face." That could hardly be called an advantage, especially if in middle life the earning power fell off seriously. Another point to which he would refer, again with some diffidence, was the comparability of the rate of wages at different periods, when the coinage was known to have had very different purchasing power; as, for instance, in 1806 and 1816, and again shortly after 1851. That seemed to him a factor which might well be correlated with the other interesting facts brought together in the Paper. The author, again, had abstained, perhaps wisely, from correlating the four main influences upon wages which he mentioned. It might not be possible so to treat them, but it appeared to him that the successive positions of the cotton wage-earnings could not be definitely appraised unless such factors received their respective values in the estimate.

Mr. WOOD, in reply, said that in regard to the President's question he might observe that it was no part of his work at present to attempt to turn the nominal or money wages into terms of real wages; but for every year since 1850 to 1903 that had been already done by him in the *Journal* last year, and it had been attempted once or twice before. His first attempt at doing it was at the British Association in 1899. The two things had to be done separately; one had to state the course of prices and of wages quite independently. They were two different problems altogether. Mr. Bowley had offered no criticism which required a reply, except that he had not dealt with half-timers exactly as he (Mr. Bowley) had wished. Mr. Bowley was thinking of two half-timers being worth one full-timer, and suggesting that he might possibly have made that estimation. He had eliminated the half-timer altogether for certain purposes; and he did not agree with Mr. Bowley's view of the function of a half-timer at all. He had had reason to criticise the suggestion, which he had known put forward, that two half-timers were worth one full-timer. As a matter of fact, they were much more frequently accustomed to find a half-timer working, *e.g.*, as a weaver's tenter, and the weaver doing without the tenter altogether during that part of the day in which the tenter was at school. The half-timer was an individual, and not half an individual only. Mr. FLUX had raised a point which was absolutely explained in the Paper; and the explanation itself became self-evident when the Paper was read closely. Beginning in the year 1833, every



child in the industry was counted in, because a complete census had been taken in that year. He had to estimate, between 1806 and 1833, that there were practically no changes in the relative numbers of men, women, and children employed; they did not know which way the change went.

Mr. FLUX asked if the conclusions held up that the relative wages of adults in 1806 and 1906 would represent even less progress than was shown.

Mr. WOOD said that question rather assumed the mixing of the hand-loom weaver with the factory operative. The wages of the factory operative had been already given in previous sections of the *Journal*; and, looking at the diagram, it would be seen that the dotted line (representing factory workers) was by no means as high in 1806 as in 1890. The high wages were the wages of hand-loom weavers; the low wages were the wages of factory operatives, who were much in the minority. The high resultant average wages of all employed were due to the fact that the hand-loom weavers were earning about 1*l.* a week, while the factory operatives were earning about 10*s.*, and that there were so many more hand-loom weavers than factory operatives. It would be correct to say that all adults in the cotton industry in 1806 earned more wages on the average than all the adults in 1890; but that was because the cotton industry outside the factory branches was largely dependent on adults. With regard to the question of the effect of hours on efficiency, right through the plea of the advocates of the legal curtailment of hours had been that the strain of the machine was so great that the reduction of hours had been necessary for the sake of the women and children. It was said that "the men hid themselves behind the women's petticoats" in asking for the Ten Hours' Act and subsequent reductions; but he did not know if that was always substantiated. He might say that his conclusion was based on unique experience. The details given him as to speeds, length of spindles, &c., were actually taken out from old records, some of which were mouldy and were found in safes and in lofts; one of the most valuable records he had found in an old stable. He had seen much more evidence, and evidence which he could not use here, because it did not belong to him, but which would support his conclusion, namely, that immediately hours were reduced it was found possible to speed up the different machines and get closer attention from the operatives; but beyond that, when new machines were put in, again further improvement was made, and it was able to run at a still faster rate. The speeding-up of the machinery in the cotton trade had been gradual and automatic; it probably advanced 1 per cent. per annum cumulatively from 1833. Schulze-Gävernitz had rightly said that a hand-loom weaver had worked 70 to 80 hours a week, but that it would be impossible to let a modern four-loom weaver work such hours. His impression was that the old weavers could not have been trained to work the present machinery at all. It was a new race of operatives and a new set of machines. In answer

to Miss Hutchins, he did not think there had been any effect on the operative; the thing had been too gradual to affect the health of the operative. His personal opinion, though he must say he had not very much evidence on that point, was that the improvement in the machine, as well as in the operative, had not had any effect on the health of the operative. With regard to the organisation, he must say the evidence as to the value of it in the cotton trade was overwhelming. One could not have without organisation that particular type of standard piece price list which induced the employer to put in newer and better machinery, and induced the operative to work that machinery. He spoke with some considerable knowledge on this point. The value to Lancashire of organisation had been so great that he remembered Mr. Macara saying to him two or three years ago that if the people of Lancashire knew and valued Mr. James Maudesley as he did, they would put up a statue to his memory. The employers in Lancashire had no doubt as to the value of organisation on both sides and of collective bargaining. Mr. Rosenbaum would find in Table 42 the evidence he wished as to the changes in wages of adults; and in Table 48 his estimate as to the changes in wages, not of adults, but of full-timers. He did not think it was possible entirely to separate the adults.



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